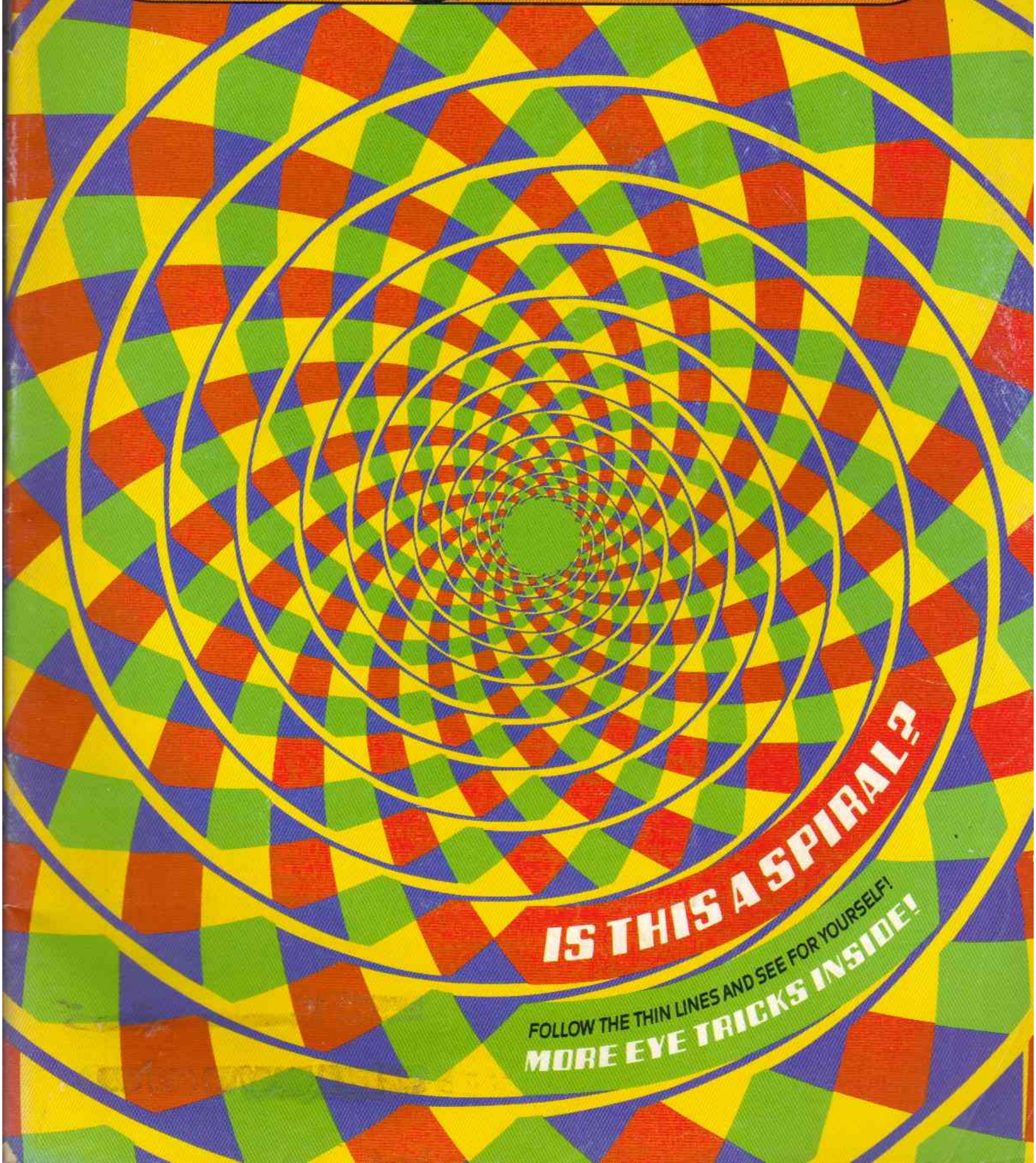
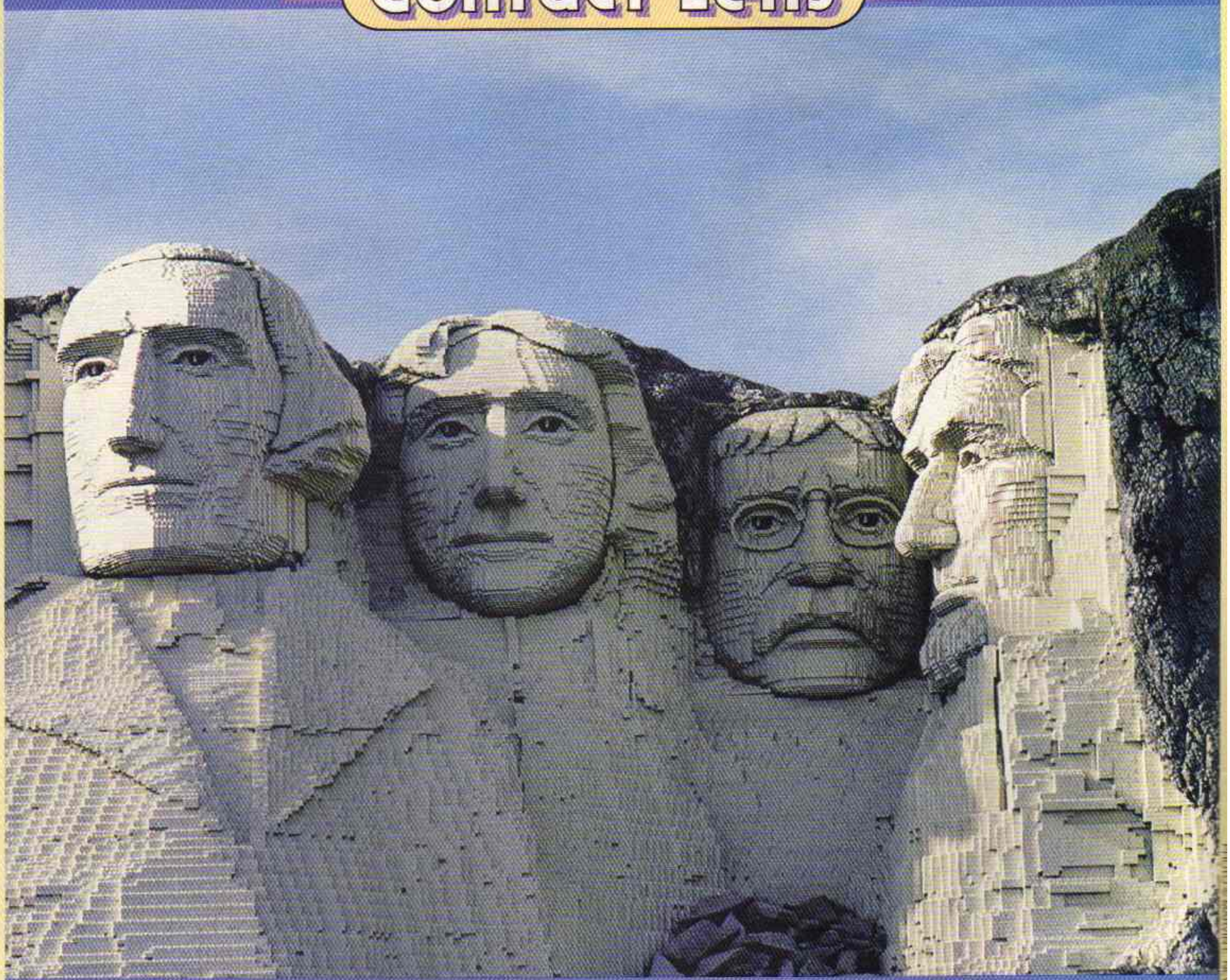
Children's Television Workshop Enter the World of Science and Technology July/August 1989

# 3-2-1 Contact®





## A Chip off the Old Block?

No, this isn't the real Mt. Rushmore—that famous rock mountain with the faces of four U.S. Presidents carved into its side. It's a model made from Lego blocks—*1,540,000 of them!*

This 50-foot-tall model towers over Legoland, an amusement park in Denmark. At the park, everything is made out of Legos. It took almost three years for artist Bjorn Richter to build the model. He planned it, designed it, and put it together all by himself.

The real Mt. Rushmore in South Dakota is over 200 feet tall, with 60-foot-high Presidential faces. It took 137 people 14 years to carve the sculptures out of *one* mountain-sized piece of granite. Maybe they should have used Lego.

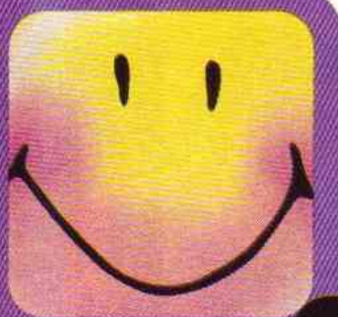
Winner/National Magazine Award
General Excellence

Award Winner/Feature Category

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The Audit Bureau

# 3-2-1 Contact



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## Featuring This Month



## Square One TV Special Section



## Departments



**ABOUT OUR COVER:** Look carefully at the "spiral" design on our cover. If you trace the lines with your finger, you'll find it isn't a spiral at all! It's an optical illusion. For more about optical illusions—and why they trick us—turn to page 14.

## Diving for Bones

People like relaxing in Florida's Warm Mineral Springs pond because it is heated by 92-degree water from an underground hot spring. And William Cockrell, an underwater archeologist, likes the pond because it contains a mound of ancient garbage!

Some 30,000 years ago, the pond used to be a cave. But then its roof collapsed. Water filled the cave and it became a pond. Whatever was inside the cave now lies at the bottom of the pond. So, the pond contains a 106-foot mound of ancient garbage.

At the bottom of the mound are the remains of extinct animals, like saber-toothed tigers and giant ground sloths. At the top of the mound, Cockrell has spotted 20th century garbage—bandages and even an aluminum lounge chair.

Cockrell hopes to preserve the pond as an archeological site.

## Woodchuck News

Q. How much wood would a woodchuck chuck if a woodchuck could chuck wood?

A. 700 pounds—on a good day.

At least that's what Dick Thomas says. He's a fish and wildlife scientist who works for the state of New York. He figured out the answer to this old riddle after studying woodchucks and doing some math.

Woodchucks don't chuck (throw) wood, but they do chuck soil when they dig their burrows. Thomas figured out how much *soil* a woodchuck chucks.

Dick Thomas's answer to the woodchuck riddle appeared on the TV show, *Jeopardy*. Since then, he's been getting a lot of mail. "I even got a letter from a lady who wrote to say she had an answer to how many peppers Peter Piper picked," Thomas told CONTACT.

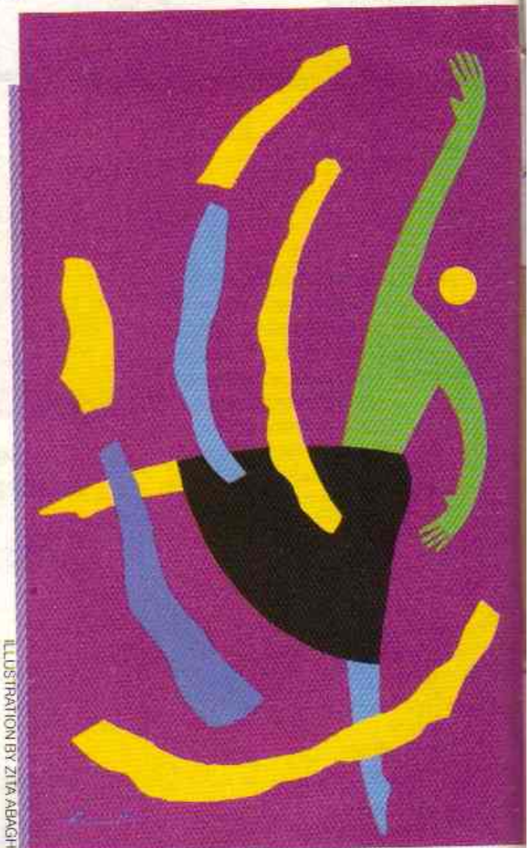


ILLUSTRATION BY ZITA ABAGHI



PHOTO: RED MORGAN/PEOPLE WEEKLY © 1988

## Body Music

You may be sitting still, but your body is busy. Your heart is pumping blood. Your nerves are delivering messages all over your body. What if all this activity were set to music? What would your body sound like?

Two scientists, Hugh Lusted and Benjamin Knapp, might have the answer.

The scientists place wires on the skin of the arm. They pick up the tiny electrical signals sent by the nerves. A computer reads the signals and translates the signals to a musical pitch. Then, an electronic keyboard plays the music.

The research is still in an early stage. But, so far, the two scientists have found that a tensed muscle produces high notes. And a relaxed muscle produces low notes.

Move over body language, it's time to play body music!

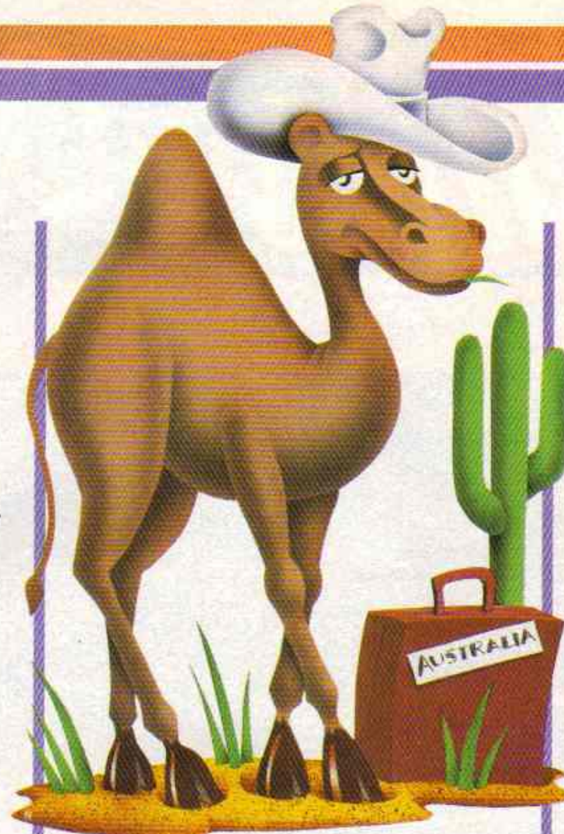



ILLUSTRATION BY NED SHAW

## Manny the Robot

Manny the Robot is so lifelike, he sweats. He also walks, sits, bends and crawls.

It's Manny's job to help scientists test protective clothing for special jobs. For example, firefighters need clothing that will protect them from the heat of fire. If the clothes protect Manny the robot, then they will also protect the firefighters.

The scientists who designed Manny wanted him to be able to copy human movement very closely. So, they watched videos of people exercising. Then they programmed Manny to do the same kinds of movements.

The more Manny does, the more Manny "sweats." For instance, if Manny walks up stairs, heaters warm Manny's "skin." Manny "sweats" by squirting water through tiny tubes.

What does a robot do after a hard day of bending, squatting, climbing and sweating? Absolutely nothing.

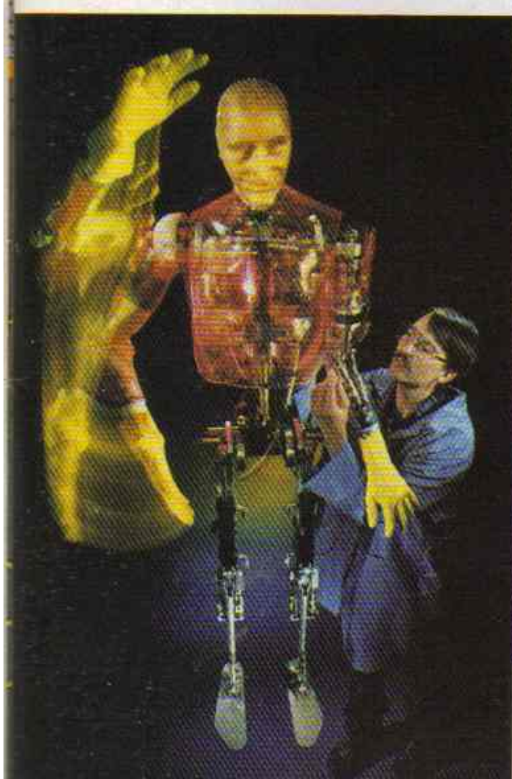


PHOTO © KEN GATHERUM

## Camels on the Range

About 100 years ago, lush green grass grew all over the U.S. Southwest. Now, much of the Southwest is desert. Instead of green grass, spiky shrubs grow everywhere.

For years, scientists have been trying to bring the grass back. But first they had to get rid of the hardy desert shrubs that had overtaken the plains.

Scientists tried expensive machinery and poisonous chemicals. Nothing worked. So, they tried camels. Camels?

The U.S. Department of Agriculture (USDA) brought in eight camels from Australia to munch on the shrubs.

Sheep and cattle won't touch the spiky plants, but camels have tough mouths. "They will eat things you wouldn't want to pick up in your hand," says Dean Anderson, a scientist at USDA.

It's too early to tell how the visitors like their new home on the range. But soon people might be singing...where the deer and the antelope *and* the camel play.

## Red in the Face

It's Monday. The day of your oral report. Standing in front of your class makes you really nervous. You can feel yourself blushing. You feel embarrassed. But scientists say that other people will like you *more* if you blush than if you keep your cool.

Roland Miller, a scientist at Sam Houston State University, asked students to do embarrassing things. They had to sing "The Star Spangled Banner" or dance—in front of another person.

The people who watched the students preferred the students who got embarrassed easily over the ones who performed without getting embarrassed.

What does this tell you? Don't be embarrassed about being embarrassed!



ILLUSTRATION BY DONNA A. CORVI

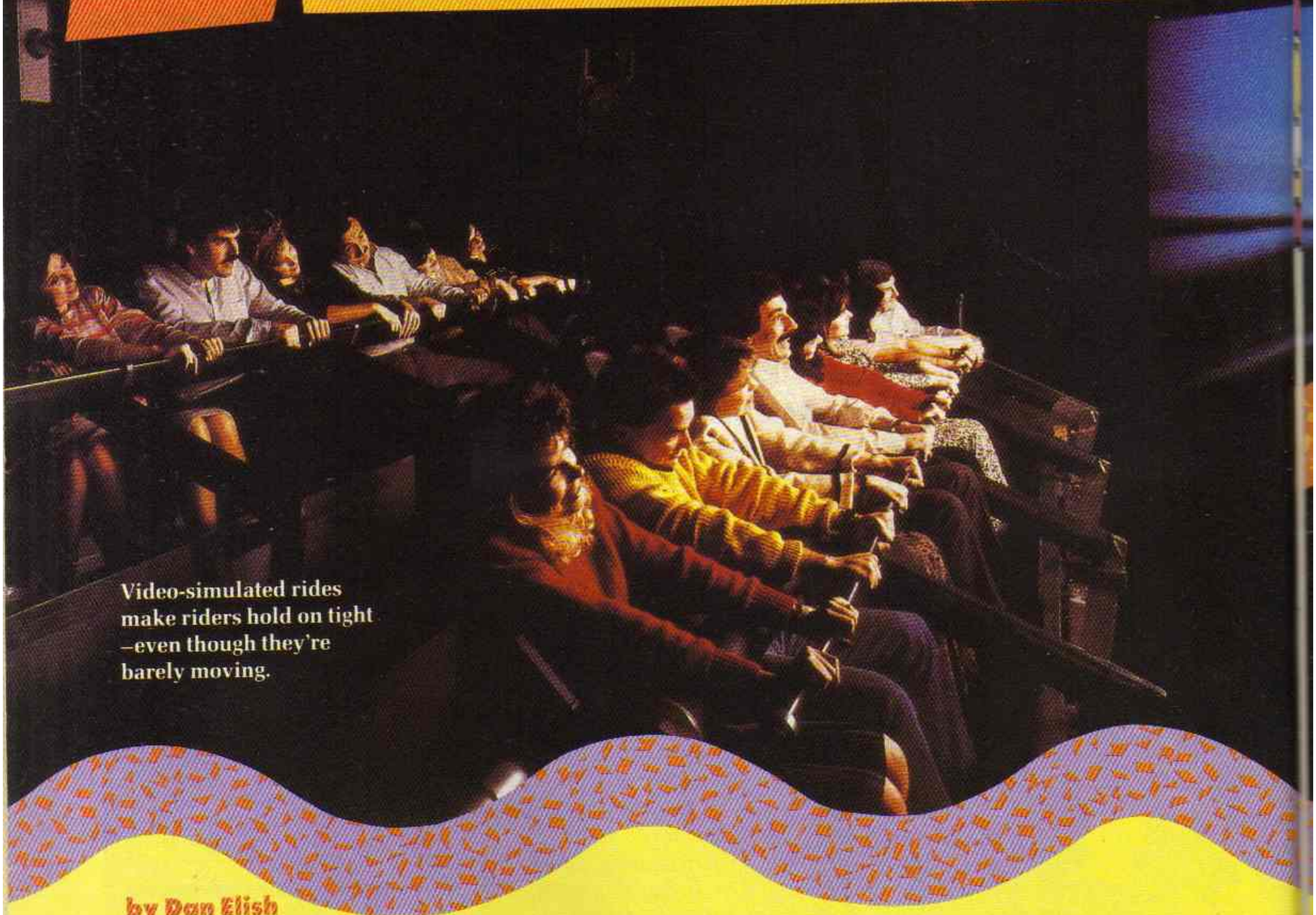
## So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science story from the news that you think our readers would like to know about. (Be sure to tell us your T-shirt size and where you heard the story.) Send to:

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**New York, NY 10023**

# LET THE GOOD TIMES

## WHAT'S NEW AT AMUSEMENT PARKS?



Video-simulated rides make riders hold on tight –even though they're barely moving.

**by Dan Elish**

You enter an empty room and sit in a chair. The lights go out. A huge screen lights up before your eyes. It takes up your whole line of vision. Suddenly, you see a picture of a landscape rushing by as the sound of wind whips past your ears. You're about to travel faster than you ever have before.

But there's no time to think about that now—because suddenly you're flying! You grab a joystick and pull it toward you. Your ship lurches away from Earth. You feel as though you are on a rocket riding through space! Watch out! There's a meteor shower! The rocket lurches left! Then right! Only through your lightning quick reflexes are you able to avoid a crash.

Racing toward you are six alien ships with their lasers set to kill! As casually as if you were going to the corner store, you swing your ship around, shoot the aliens out of the sky, and glide back to Earth for a smooth landing. You leave your craft with the cool confidence that belongs to those few who have faced the dangers of space —and lived to tell about it.

Sound like fun? Well, in 10 years "video-simu-

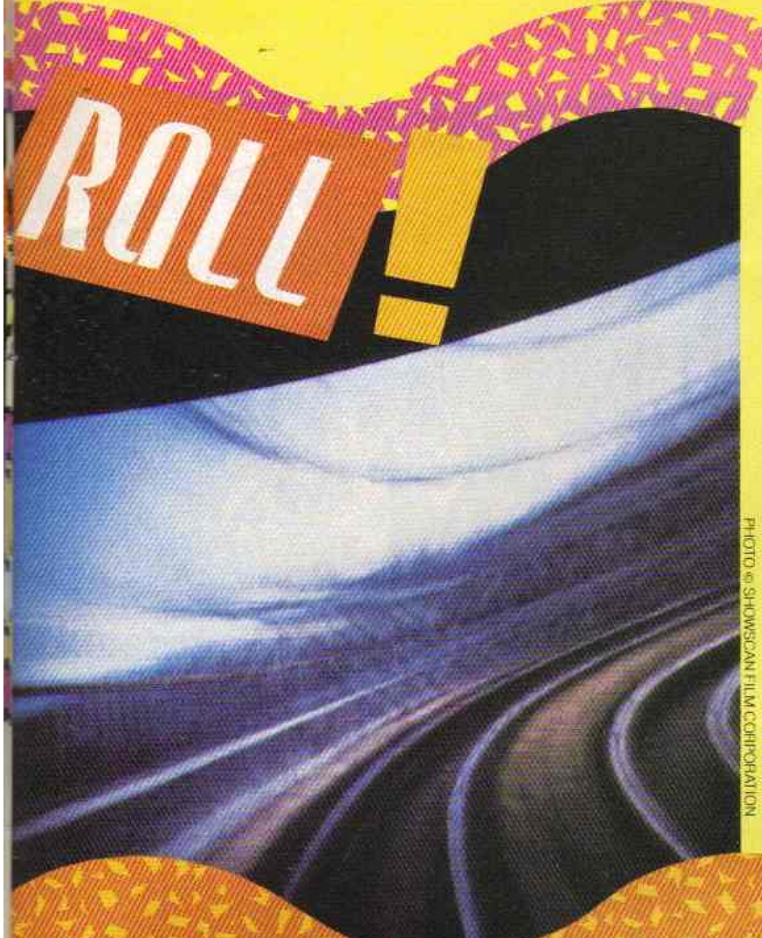



PHOTO © SHOWSCAN FILM CORPORATION

lated rides" like this will be all the rage at amusement parks. As Bob Maxwell, who helps run Six Flags Amusement Park in Atlanta, GA, told CONTACT: "Video-simulated rides are definitely the rides of the future." In these kinds of rides, a series of special effects makes you feel like you're moving—without moving at all.

## Look Ma, No Hands!

"Video-simulated rides give the feeling of going down a *very* steep drop. The chair the rider is in only has to be tipped forward a little bit," explains Peter Schnabel. He is an engineer at Intiman's Ride Manufacturer, the company that makes about 90 percent of all amusement park rides.

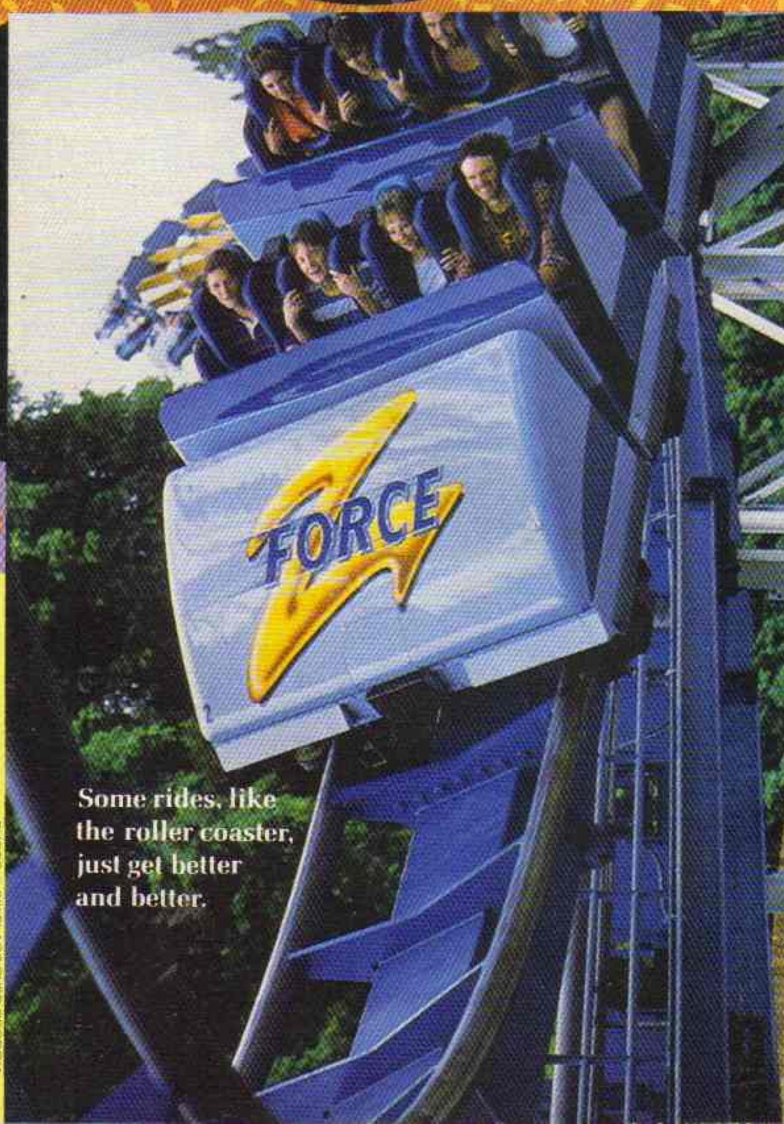
The video-simulated rides create an *illusion*. Because the images on the screen look so real, your brain is easily fooled. You feel the slight movement of the chair, wind whistling in your ears and your hand on the joy-stick. Your eyes do the rest. They tell the brain that you are moving very fast. They also alert your brain to danger. The illusion works because that's the way your brain functions in real life. It receives information from your eyes, ears and body—and puts it all together. As far as your senses are concerned, you are flying through space!

The engineers at Intiman's are so good at making you *feel* as though you are riding through space, they have to make absolutely sure they don't overdo it. As Schnabel told CONTACT: "In some of these rides, the simulation is so *real* that some people come out of the booth with marks on their hands from holding on so tightly."

## Back to the Drawing Board

But video-simulated rides are only one type of new ride being developed. Many others are still on the drawing board. Walt Disney Company has a whole department entirely devoted to the development of new rides and attractions.

"It's a creative process that needs an engineer's mind," says Dave Harbaugh, a Disney engineer. That's because an engineer can tell right away whether it's possible to build something ➡




**Some rides, like the roller coaster, just get better and better.**

PHOTO © SIX FLAGS OVER GEORGIA

—and make a good idea into a fabulous ride.

Disney's newest project is "Norway Pavilion" where passengers can take a voyage on a Viking ship. The ships cruise through raging seas and lands populated by trolls—supernatural giants. In building this ride, the designers worked hard to give the public lots of thrills. But they also wanted to make sure the riders would be safe.

Safety is the most important concern of every ride-maker. Each new ride is tested by a professional pilot who is used to withstanding a lot of pressure from fast starts, hairpin turns and stomach-churning spirals. Peter Schnabel told CONTACT: "The pilots help us set the rides at proper speeds." They also get advice from doctors. "We have to figure out how much excitement the ride should create. We don't want anyone to get sick."

### Anybody Seen My Wife?

One new kind of "ride" (well, it's not really a ride) is the "Wooz" in Vanaville, CA. The Wooz



PHOTO © KINGS ISLAND



PHOTO © SHOWSCAN FILM CORPORATION

**It'll be a while before you see this video-simulated ride at amusement parks. But keep your eyes peeled!**



PHOTO © 1988 THE WALT DISNEY COMPANY

**Above:** Take a ride through history and brush up against these dinos at Disney's *A Universe of Energy Theatre*.

**Left:** You can't beat a water ride on a hot summer day.



PHOTO © SUN CREATIVE SYSTEMS

is a huge outdoor maze that covers an acre of ground. Here's how it works: The customer punches a timeclock and enters a maze, a zigzagging course of seven-foot-high wood panels. If the "Woozer" can get to the other end in less than 40 minutes, he or she gets to try a harder course for free.

Larry Friday, who works at the Wooz, explained to CONTACT: "To be good at the Wooz takes a lot of concentration and a good sense of direction. It also takes a competitive spirit."

To make sure that the customers keep coming back, every few weeks a computer prints out a new way to arrange the course. Friday told CONTACT: "What the Wooz is really about is fun and games."

Recently the Wooz was used for *more* than just fun and games—a couple got married in it! As Larry Friday told CONTACT: "The bride entered on one side and the groom on the other. They met in the middle and had the ceremony!"

Of course, not all the rides at amusement parks are brand new. Roller coasters and water rides have been around for years. But many of them have a new look—packed with bigger thrills and some wet spills. For example, Kings Island, in Cincinnati, OH, just introduced "Amazon Falls," where 20 people sit in a large boat, go down a 50-foot drop, and make 20-foot waves!

Bill Medford, an official at the park, told CONTACT: "We measured where the waves went. Then we built walkways above the water so people could get wet if they wanted—without actually going on the ride." Now, visitors to Kings Island can get a free shower along with the price of admission!

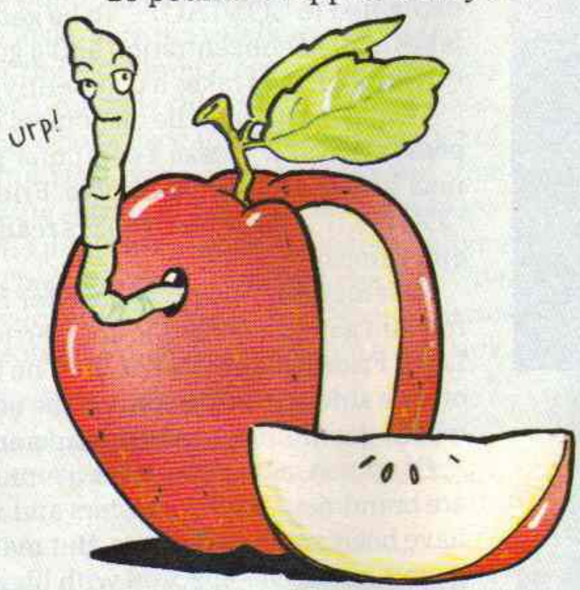
And Six Flags, in Atlanta, GA, just opened "ZFORCE"—a giant roller coaster that lifts passengers up 74 feet. Then it immediately dives into a sharp downward spiral. The spirals and corkscrew dives imitate flying in a stunt plane.

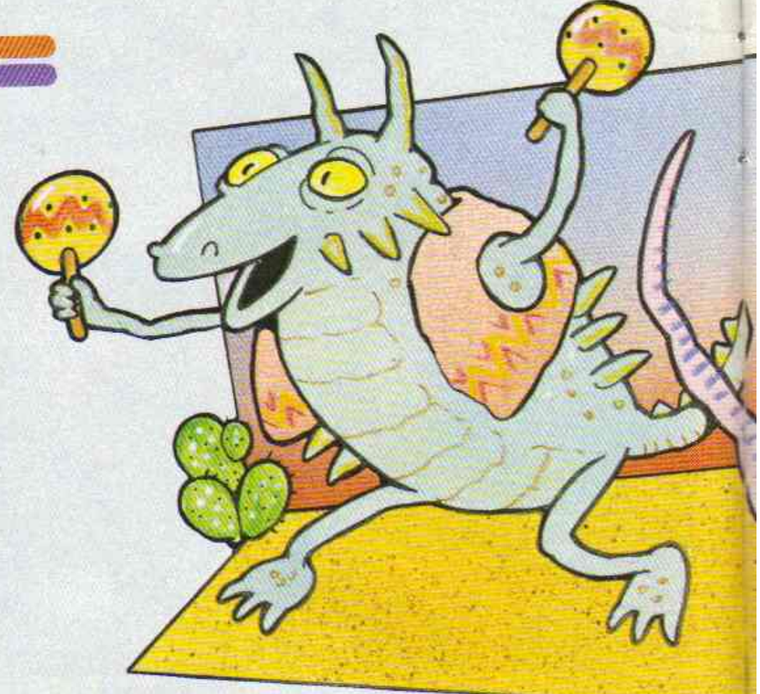
So, next time you go to the amusement park, hang onto your hat. You're in for a wild ride!

**Left:** If you ever wondered what being *inside* a maze is like...try the *Wooz*. And bring a friend–you might be a-mazed at how hard it is to get out.

# Factoids

On average, Americans eat
20 pounds of apples each year.



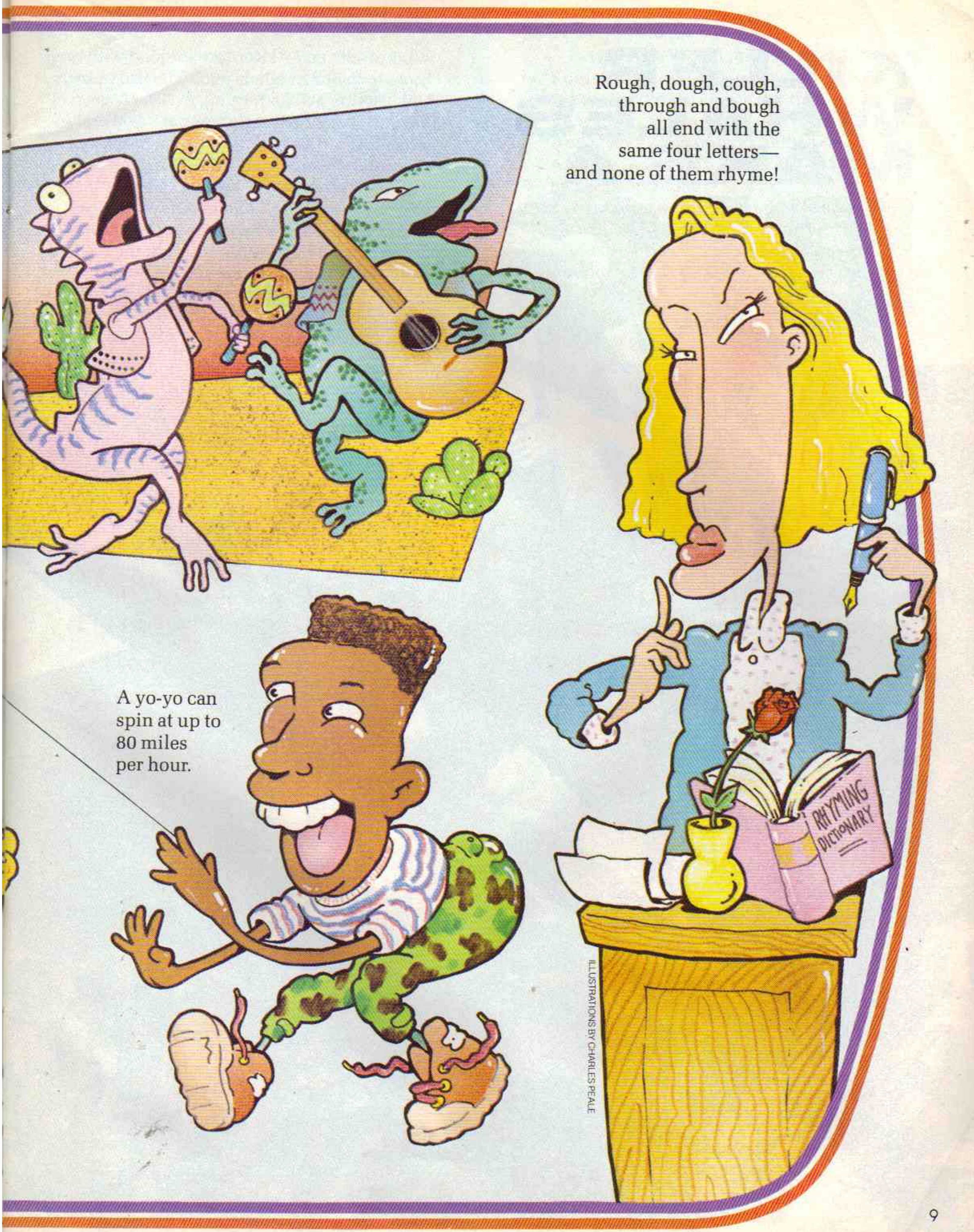
Mexico has more kinds of
reptiles and amphibians
than any other country.

President Teddy Roosevelt holds
the world's record for handshaking.
In one day, he shook hands
with 8,513 people.






Lions and many other cats
pull in their claws when
they walk. That way, they
make less noise and can
sneak up on their prey
more easily.




ILLUSTRATIONS BY CHARLES PEALE

# KILLER WHALES MAKE A BIG SPLASH

By Elizabeth Keyishian

Liz Morris and Al Kordowski stood with their backs to the killer whale pool. The two trainers had just finished performing in "The Legend of Shamu," the killer whale show at Sea World in Orlando, Florida. CONTACT went to see the show and take a behind-the-scenes look at the care and training of the killer whale.

Without warning, Shamu—the oldest and largest of the killer whales—launched himself toward Liz Morris. Within seconds, the top half of his big whale head splashed up alongside

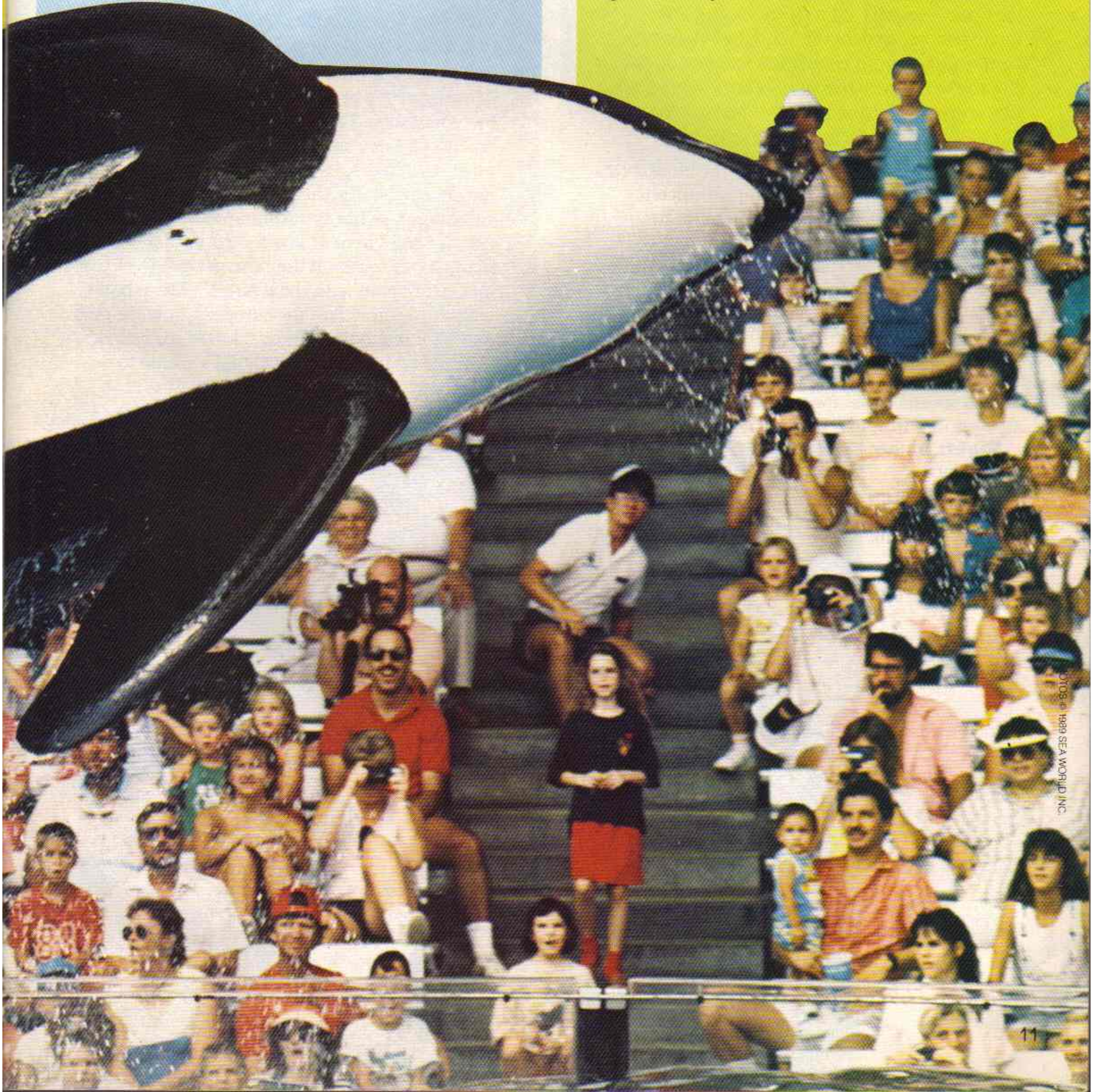


Liz's legs. He opened his mouth—wide. It was lined with lots of razor-sharp teeth.

Liz Morris was in the middle of answering a question about training techniques. She didn't even flinch. "He just wants attention," she told us. And right on cue, the huge killer whale started whining, whimpering and singing. He sounded more like a puppy than a whale. Liz Morris reached down to rub his fin.

Between the two of them, Liz Morris and Al Kordowski could tell you anything you wanted to know about the six whales they work with. They train, perform, feed and play with them. And recently, the trainers helped one of the whales—Kandu—with the birth of her calf—newer Baby Shamu.

The trainers share what they learn with veterinarians and scientists who care for and study the animals. "Everything we learn is a piece of a puzzle," says Frank Murru, who oversees the →



care of all the animals at Sea World. Every piece of the puzzle teaches vets and scientists something more about how the killer whales communicate, how they care for their young, and how they behave with each other.

Audiences at the shows learn something about killer whales, too. "Everything the whales do in the show is typical behavior in the wild," says Frank. At Sea World, the whales leap out of the water and slide on a concrete slab. In the wild, the whales leap out of the water and slide up on ice floes—mostly when they are lunching on an unsuspecting seal. In the wild the whales communicate with each other through sound. In the show, many of the signals are given by tones under water.

## Tricks of the Trade

The killer whale trainers have the closest relationship to the whales of all the people who work at Sea World. Developing that relationship takes years. Al has trained whales for 13 years and Liz has trained them for seven. Both trainers agree that one of the keys to training is to get to know each of the whales personally, well, make that "whalesonally."

"One of whales is very laid back, very slow moving and slow learning. But he has a very good attitude. He's like a teddy bear. Another is very curious, quick to pick up on things. He likes to chase people and stick his tongue out at them," says Liz Morris.

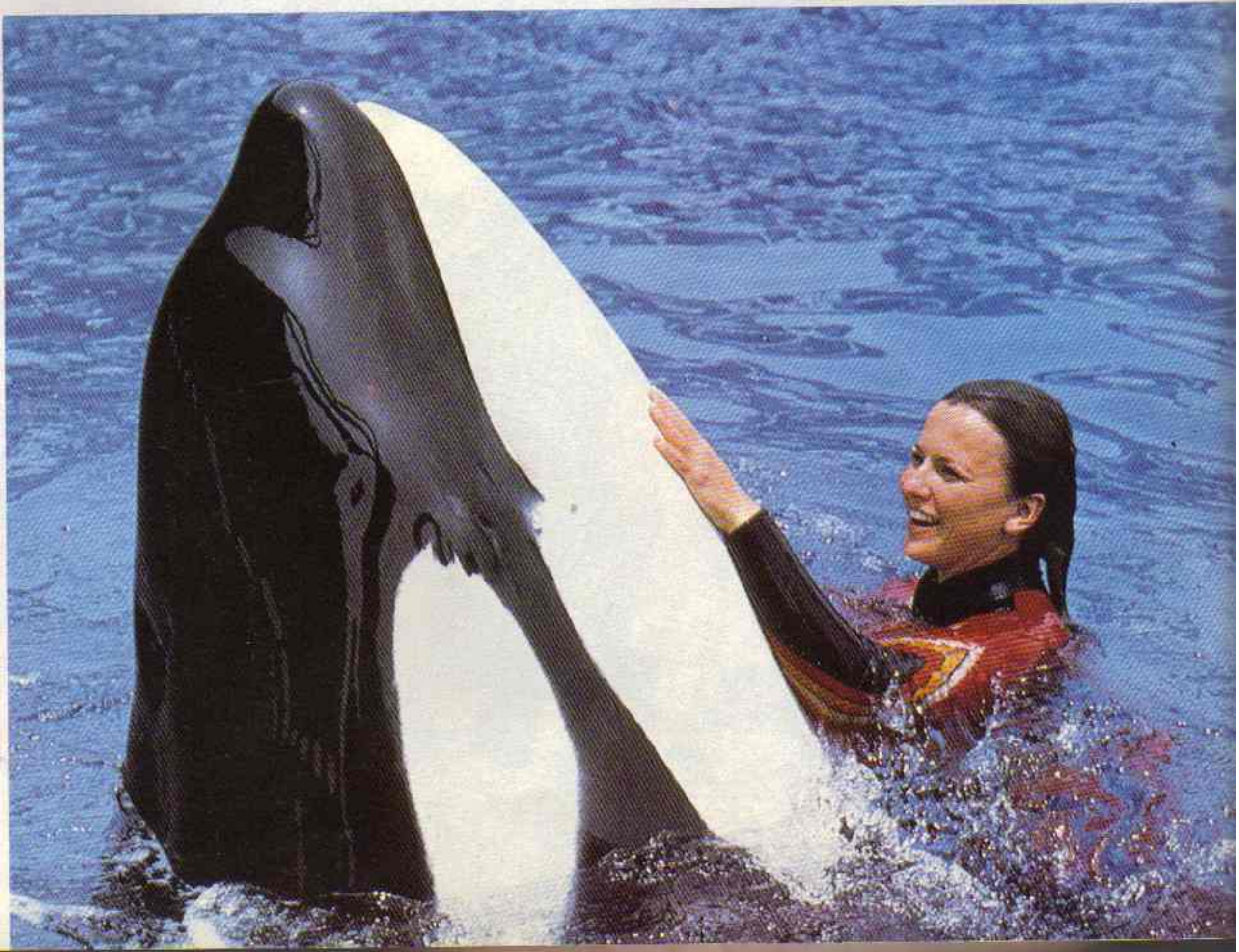
Once the trainers get to know the whales, they figure out how each whale likes to be rewarded. And it's not only a reward of food that a whale is looking for. In fact, the whales prefer attention. "They respond to having their bellies rubbed, to laughing and clapping," says Liz Morris.

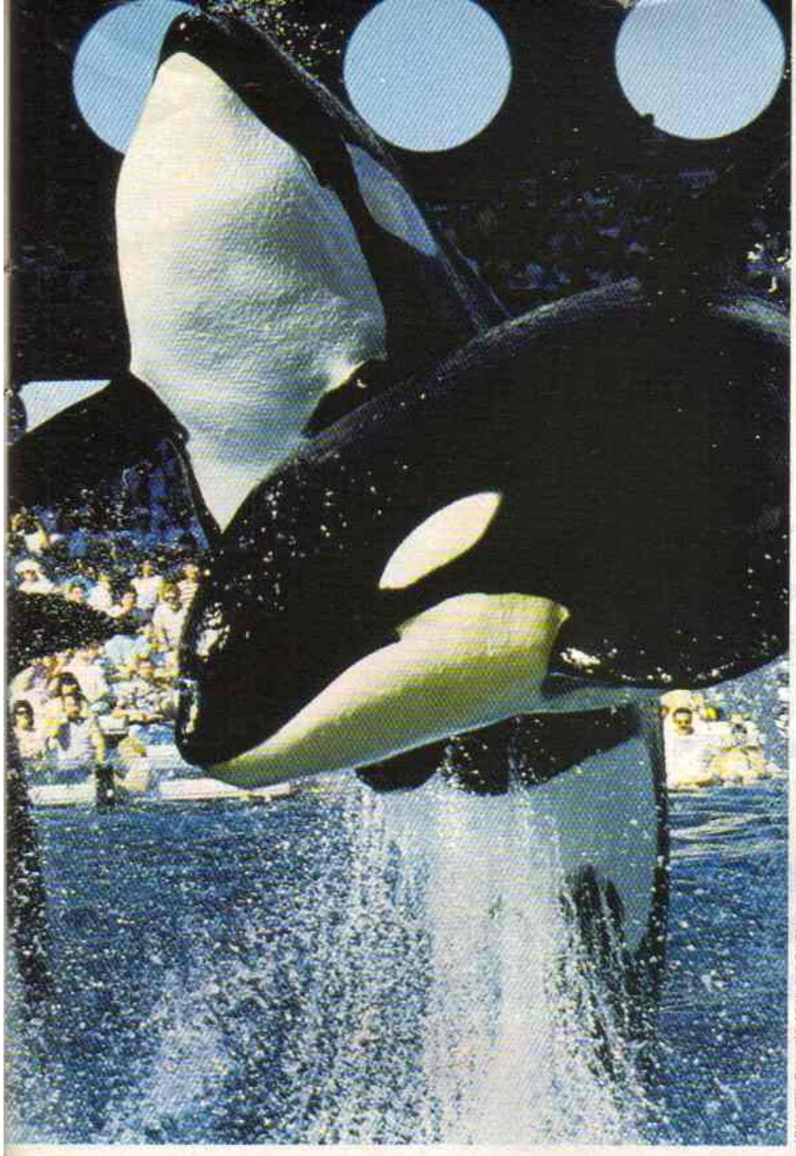
## Whaley Want a Cracker?

Learning to become a whale trainer takes several years. For the first year, the trainer-to-be does not even get in the water! That's because the whales need to get used to the trainers. "It's a real 50-50 relationship," says Al. The trainers must *earn* the respect of the whales. "When a new trainer starts, the whales get what we call substitute teacher syndrome." When a substitute teacher takes over a class for the day, some students try to see what they can get away with. It's much the same with the whales. "The whales want to see how far they can push new trainers and how much they know," Liz Morris adds.

The new trainer might signal a whale to do a

**Right:** Trainer Liz Morris gives Shamu a little attention—and a belly rub.







head shake. The whale might decide to do a flip instead. "The new trainer might act surprised. An experienced trainer wouldn't pay any attention," adds Liz.

That's because the trainers use "positive reinforcement" to teach whales to do tricks. When the whales are taught something and they do it right, they get rewarded. If they do something wrong, the trainer ignores them.

One important fact that scientists have discovered about killer whales is that they are always exploring their surroundings. The whales are very curious and get excited when something unexpected happens. So, the trainers keep the whales' life interesting. "They keep the whales guessing. And the whales do new things to see how the trainer reacts," says Frank Murru.

When people from Cypress Gardens, a nearby amusement park, performed at Sea World, the trainers noticed that the whales were fascinated by one performer's glow-in-the dark dress. "The whales all watched her walk by," says Al Kordowski. "As a reward for Shamu, we asked the performer to come back—wearing the glow-in-the-dark dress—and she played with him."

## Tigers of the Sea

In the wild, killer whales are at the top of the food chain. That doesn't mean they are the biggest. It means they have no natural enemies. The whales travel in packs, called pods, and can attack and eat whales 10 times bigger than themselves. They also feast on seals, penguins and fish. But killer whales are very gentle with humans. Why? "Man is not one of their typical foods," says Frank.

Whatever scientists learn about whales in the wild can be used to make the captive whales more comfortable. "In the wild, the pods are made up of females, young adults and baby whales. Males are not really part of the pod. We have a similar setup here," says Frank Murru. "Shamu doesn't like to be with the females for too long. The females hassle him." So, the trainers make sure that the whales can roam wherever they want in the giant pool. Gates divide different sections of the pool. They keep the gates open, so that the whales can choose wherever they want to go.

There's still a lot to learn about killer whales. Someday, scientists even hope to communicate with them. That'll make a whale of a story! 321

**Above:** Everything the killer whales do in the show–including leaping–is natural behavior for them in the wild.

**Below:** Al Kordowski has a short conversation with a walrus at Sea World.



# MORE THAN MEETS THE THE EYE

## Illusions That Baffle Your Brain

**By Russell Ginns**

When you read the title of this story, did you notice something funny? Go back and read it again. Still don't see anything? Now read it very carefully, one word at a time. Aha! The word "THE" is printed twice. It's an illusion, and unless you know exactly what you're looking for, it will probably fool you again and again.

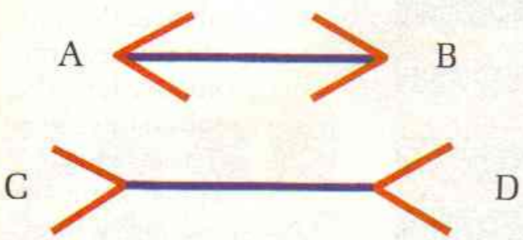
Illusions can make you believe that something is bigger or smaller than it really is. They can also make colors seem brighter or darker, and can even make you see things that aren't really there. But these pictures are doing more than just playing tricks on your eyes, they're fooling your brain as well.

"Illusion is the wrong word for it," says David Van Essen, a scientist at California's Institute of Technology. "It's really a misunderstanding between your eyes and your brain." Your eyes are the parts of your body that collect information, but it's your brain that really decides what you see. And sometimes your brain can make a wrong decision.

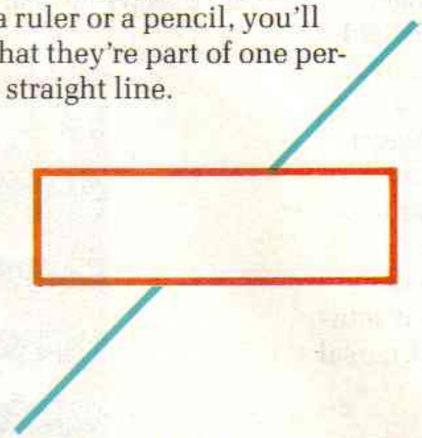
Van Essen told CONTACT: "When you look at something, your brain tends to fill in the missing spaces." Many optical illusions are simple drawings with lots of missing details. Your brain makes mistakes as it fills in the spaces and—presto! You're seeing something that really isn't there.

Van Essen and other scientists are using optical illusions to learn more about how animals and humans see. To help you do some visual experiments of your own, we've put together a collection of optical tricks for you to try. There are explanations for some of them. Others remain pretty much a mystery. So sit back, relax and open your eyes, as CONTACT takes you on a tour of the mysterious world of optical illusions.

**1** Look at these two arrows. Does the line from C to D seem longer than the line from A to B? If you measure them with a ruler, you'll find that they are exactly the same length. This is easy to see just by taking away the arrowheads. If you cover them, the illusion disappears.




**2** Do the lines that touch this box look like they are part of the same line? If you check it with a ruler or a pencil, you'll find that they're part of one perfectly straight line.

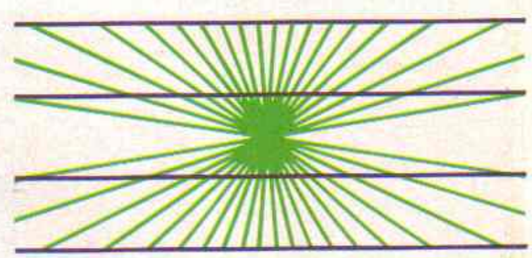


One possible explanation for these two tricks is that there are extra pieces of information that confuse your eyes. Sometimes this is called *visual noise*. If you were listening to a song on the radio and someone turned a TV on really loud, you'd have a hard time hearing all the notes of your song. Visual noise works the same way. The box and the arrow heads make it hard to see the lines correctly.

**3** Here are two drawings with even more noise. Can you tell if the lines in picture E are parallel? Do the two lines in picture F look curved? Check them with a ruler. If the extra lines weren't there, it would be easy to see that the lines are all parallel. But unless you concentrate very hard, the noise will fool you again and again.

E

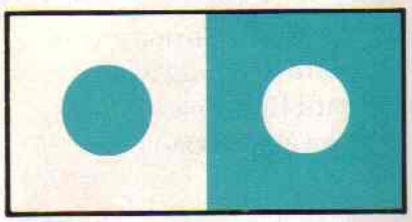




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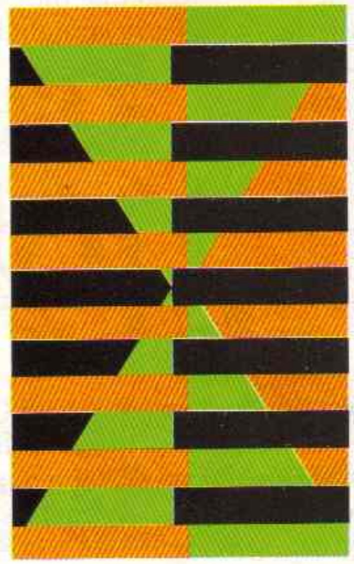
## 4

Take a look at these two circles. Does the white circle seem larger than the blue one? That's because of *contrast*, which means that an object will appear to change, depending on its surroundings. Bright images seem to spread out a little on a dark background. In the same way, a bright background seems to get bigger, making a dark object look smaller. Advertisers sometimes take advantage of this trick. By making a package a bright color, advertisers can make a product seem a little bigger than it actually is. (You've never seen a black cereal box in the stores, have you?)



## 5

Contrast can also make shades and colors seem lighter or darker. Look at the green stripes. The ones on the left seem brighter, even though they are exactly the same as the ones on the right.

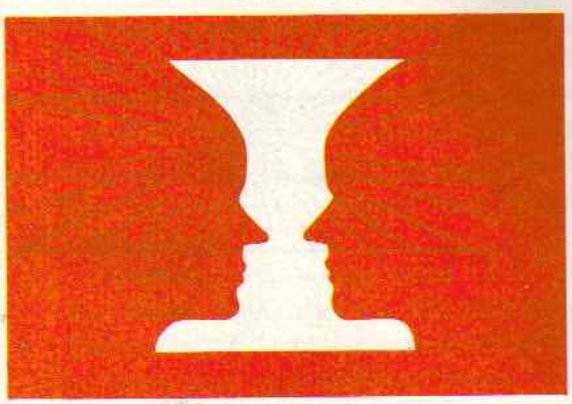


## 6

You can even change the way that something looks by surrounding it with itself. When you stare at this grid, do you see gray spots where the white lines meet? These "ghost spots" show up because white looks less bright when it is surrounded by all white.

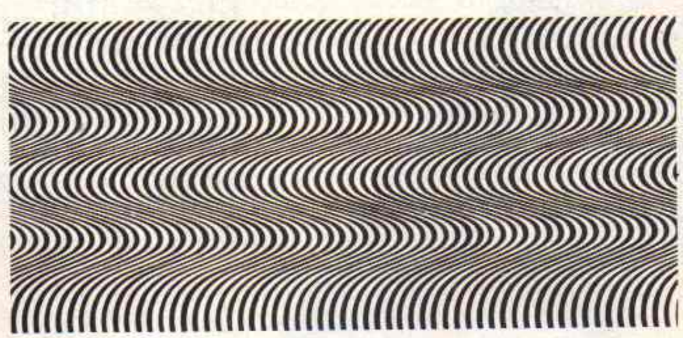
## 9

Some illusions happen because your eyes can't decide which is the correct way to see something. When you look at this picture, do you see two faces or a vase? If you concentrate, you can switch back and forth between the two images.



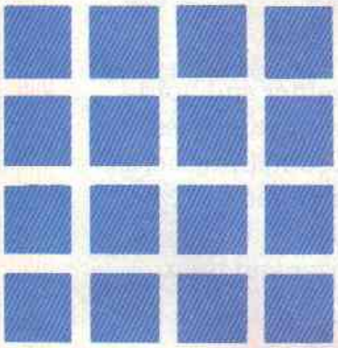
## 10

The same trick can be used to give the viewer a feeling of motion. When your eyes can't choose between backgrounds, the picture will seem to vibrate. Does this drawing seem like it's moving? That's because your eyes keep changing between backgrounds. At first it looks like the picture is white on black–then it's black on white.

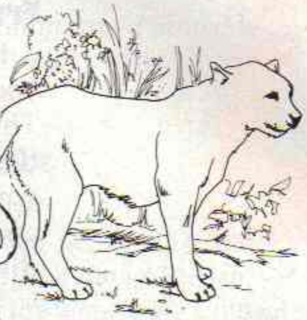


7

Stare at these spots for at least one minute. Then look at the drawing below it. What happens? You should see faint spots on the leopard. This is caused by an *after image*. By staring at the first picture, your eyes get so used to seeing the spots that you still see them when you look at something else.







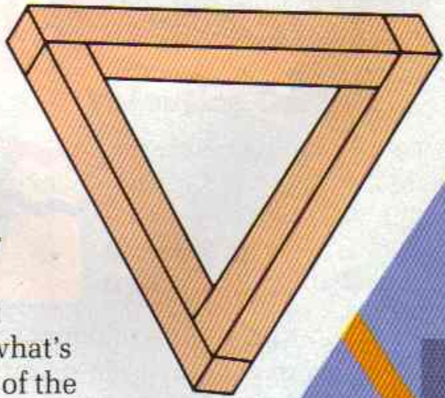
8

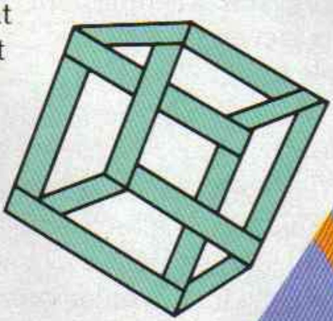
*After images* also work with colors, and the results are even more surprising. Every color has a *complementary color*. Bluish-green is the complement of red. Yellow is the complement of blue, and so on. The after image of a color picture shows up in its complementary colors. Stare at this star for about two minutes. Then stare at a blank piece of paper. It should look red, white and blue to you.



11

Some artists use this effect to create fantastic scenes or impossible objects. M.C. Escher is famous for his drawings of staircases that go nowhere and water that seems to flow uphill. Here are two drawings of objects that couldn't exist in real life. Can you figure out what's wrong with them? If you look at part of the object, it seems fine. But if you look at a different part, something changes. It's enough to drive you crazy!

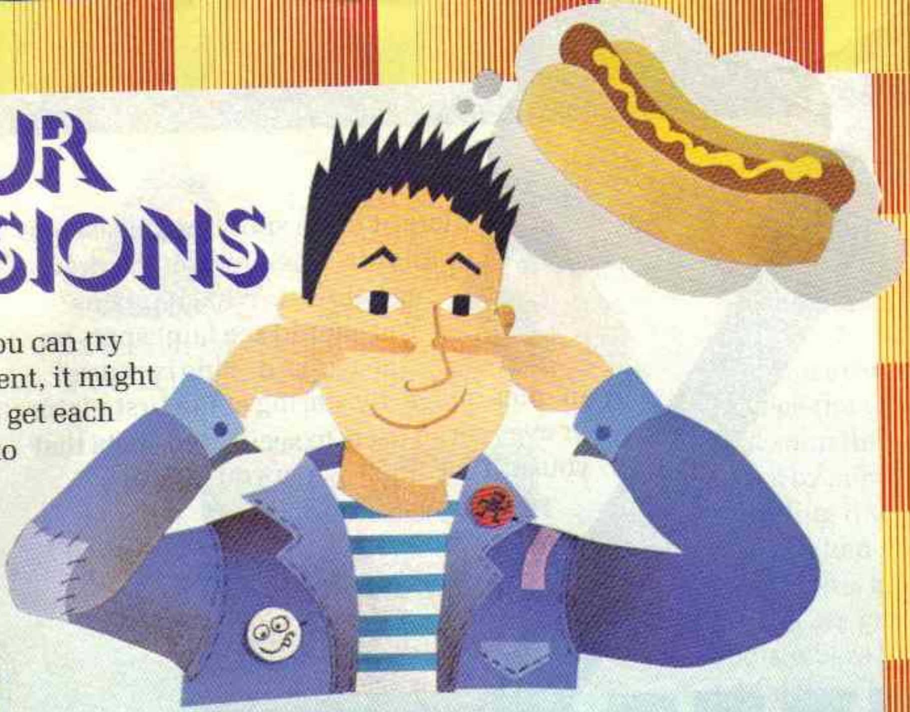




Even though these illusions have been around for many years, scientists still aren't really sure how or why most of them work. "We probably understand about five percent of the brain as a whole," David Hubel, a researcher at Harvard Medical School, told CONTACT. "Many optical illusions take place in parts of the brain that we haven't even explored yet."

# MAKE YOUR OWN ILLUSIONS

Here are some optical tricks that you can try on yourself and your friends. Be patient, it might take a few minutes to get each of these illusions to work right:



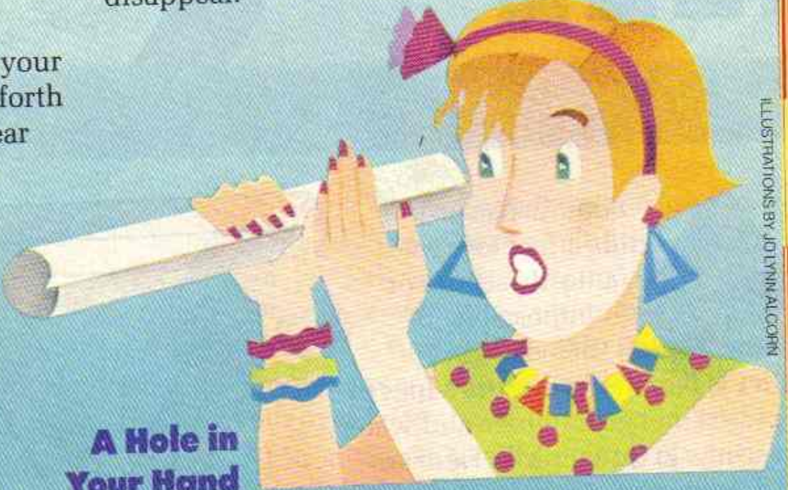


## Free Food!

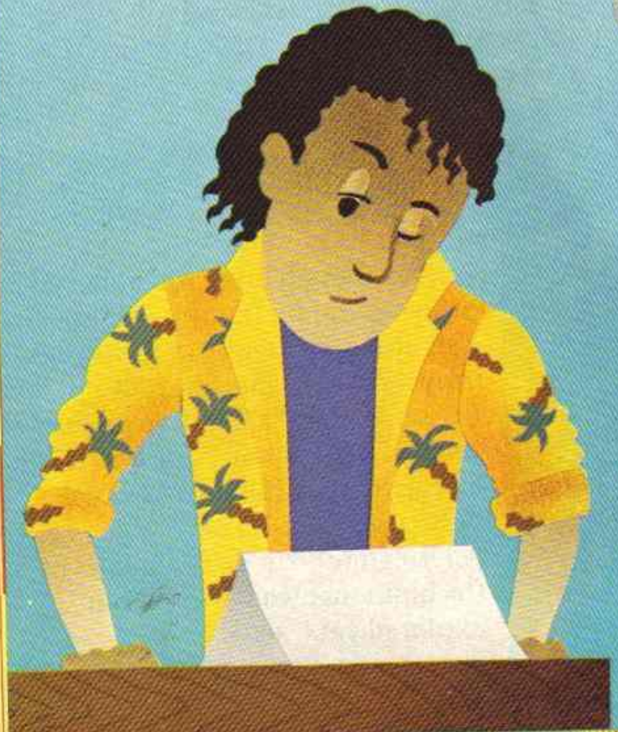
Point your index fingers together and hold your hands about six inches from your nose. Then look past your fingers at something across the room. A hot dog will seem to float between your fingers. If you slowly move your fingers apart, the hot dog will get shorter and then disappear.

## Free Money!

Take two pennies and hold them between your index fingers. Quickly move them back and forth against each other. An extra penny will appear out of nowhere!



ILLUSTRATIONS BY JOLYNN ALCORN



## A Hole in Your Hand

Roll a piece of paper into a tube and hold it close to your right eye. Hold your left hand next to the tube with your palm facing you. Keeping both eyes open, focus on an object a few feet away. It should look like your left hand has a hole in it!

## Crazy Paper

Take a small piece of paper and fold it lengthwise. Open it a little and stand it on a table. Then close one of your eyes and stare straight down at it. After a while, you won't be able to tell if you're looking at the inside or the outside of the paper!

# Mail




ILLUSTRATION BY MARY DUARTE

## Keep Smiling

Dear CONTACT,

In your Jan./Feb. 1989 issue, your instructions showed how to make the eyes on the Smiley face, but I couldn't figure out how to make the mouth without picking up my pencil.

Sydney Gould
Walnut Creek, CA

*You can make the mouth the same way that you made the eyes. After you've drawn both of the eyes, slide your pencil to the back side of the paper again. Then fold a corner that touches a little above the bottom of the circle. Move your pencil to that corner and use it as a starting point to draw the smile.*

## Bookkeeping

Dear CONTACT,

In the July/August 1988 FACTOIDS, you said that "BOOKKEEPER" was the only English word with three sets of double letters right after one another. That's wrong. "BOOKKEEPING" also has three sets of double letters.

Cynthia Millsap
Woodstown, NJ

*You're right. There are two words. "BOOKKEEPING" is the job of a "BOOKKEEPER."*

*Thanks Cynthia, you'd probably make a good bookkeeper. Or perhaps a writer!*

## Name Sake

Dear CONTACT,

How are you connected to the TV show "3-2-1 Contact?" Also, where does the name 3-2-1 Contact come from?

Serena Jones
Washington, DC

*Serena, we have the same name because we started at the same time and we covered much of the same amazing science stuff—including the Bloodhound Gang.*

*The name comes from the theme song from the show. It means the point where "contact" or understanding begins and things start to happen.*

## CONTEST ROUNDUP

### Valentine Contest

*Jenny and Kathryn Peterson of Austin, TX were the first place winners of our Jan./Feb. 1989 Valentine's Day Contest. Using the letters that make up the word "VALENTINE," they were able to spell 307 different words!*

*Our other winners were:*

**Michelle Mraz of Clarion, IA (251 words)/Dawn Rutan of Newburg, PA (235 words)/Scott Navarre of Colby, WI (225 words)/Louis Eisenberg of Chapel Hill, NC (215 words)**

### Who's This?

*Our December 1988 "Who's This?" contest flooded our offices. 10,000 of you were quick to tell us that the mystery person was Leonard Nimoy, who played Mr. Spock on the TV series* **Star Trek** *—and in the movies. These were the first five people to write in:*

**Kelly Kossegi,** Manassas, VA
**Teresa Huang,** Bath, NY
**Ericka Martin,** Flagstaff, AZ
**Joel Harrison,** Abernathy, TX
**Joey Jacobellis,** Fremont, NH




Colgate
HOW TO PLAY
PLACE GAME PIECES ON START. ROLL DICE AND MOVE YOUR GAME PIECE. IF YOU LAND ON A "TRUE OR FALSE SQUARE," ANSWER THE QUESTION, AND THEN CHECK YOUR ANSWER. IF IT'S RIGHT, ROLL AGAIN. IF NOT, YOUR FRIEND ROLLS. LAND ON A "PICTURE SQUARE," AND YOU LOSE A TURN. WHOEVER REACHES THE END FIRST, WINS!
START
1. A CROCODILE HAS ONLY ONE SET OF TEETH.
T or F
2. IT'S OK TO EAT OR DRINK SOMETHING GOOD FOR YOU, AND GO TO BED WITHOUT BRUSHING YOUR TEETH.
T or F
3. YOU DON'T NEED TO BRUSH YOUR TEETH WHEN YOU WAKE UP IN THE MORNING.
T or F
YOU DIDN'T BRUSH AFTER EATING SWEETS! BACK 1 SPACE.
4. THE TUSKS OF AN ELEPHANT ARE ACTUALLY TEETH.
T or F
5. TEETH ARE HARDER THAN THE BONES IN YOUR BODY.
T or F
6. COLGATE JR. IS ONE OF MANY TOOTHPASTES SHAPED LIKE A STAR.
T or F
OOPS!
YOU RAN OUT OF TOOTHPASTE! BACK 1 SPACE.
7. SOME SNAKES HAVE HOLLOW TEETH.
T or F
8. YOUR TEETH START TO DEVELOP BEFORE BIRTH.
T or F
A
B
C
SIMPLY CUT DICE WITH SCISSORS. FOLD ALL TABS ALONG DOTTED LINE. THEN TAPE #1 TO TAB A, #2 TO TAB B, AND #3 TO TAB C. (NOW YOU'RE READY TO ROLL!)
ANSWERS
7 · TRUE - RATTLESNAKES AND COBRAS HAVE HOLLOW TEETH TO INJECT VENOM INTO THEIR PREY. 8 · TRUE
9 · FALSE - YOUR CANINE TEETH ARE LOCATED NEXT TO YOUR TOP FRONT TEETH.
10 · FALSE - IT FOAMS LESS TO MAKE BRUSHING EASIER.
11 · TRUE - THAT'S WHY COLGATE JR. HAS FLUORIDE.



te Junior Presents
OOTH
CONSEQUENCES!
Game 3
"CUT US OUT."
10. COLGATE JR. FOAMS A LOT MORE THAN ADULT TOOTHPASTE.
T OR F
11. BACTERIA CAUSES CAVITIES. FLUORIDE HELPS STOP THEM.
T OR F
YOU DIDN'T SEE YOUR DENTIST THIS YEAR! BACK 2 SPACES.
THE END
FOUND ONLY IN DOGS.
T OR F
FORGOT TO
BEFORE
TIME!
SPACE.
HEY KIDS! HERE'S A GAME JUST FOR YOU FROM THE TOOTHPASTE THAT'S JUST FOR YOU— COLGATE JUNIOR! AND GUESS WHAT? IF YOU SEND ME A TRUE-FALSE QUESTION ABOUT DENTAL CARE, I'LL SEND YOU A BRAND-NEW COLGATE JUNIOR T-SHIRT!* SO YOU CAN BE A COLGATE SUPERSTAR, TOO! JUST REMEMBER TO INCLUDE YOUR NAME, ADDRESS, AND SIZE, AND MAIL TO ME, THE COLGATE SUPERSTAR, AT: P.O. BOX 1624, RIDGELY, MD 21681. GOOD LUCK, AND KEEP ON BRUSHING!
*WHILE SUPPLIES LAST.
OFFER EXPIRES DEC.'89.
Colgate JUNIOR
Fluoride Protection and Gentle Care For Children's Teeth
Colgate JUNIOR
Sparkling Fluoride Gel Toothpaste
Sparkling Star Shape
1 · FALSE–NEW TEETH CONTINUALLY GROW
PUSH THE OLD ONES OUT.
2 · FALSE–ALWAYS BRUSH BEFORE BEDTIME
3 · FALSE–YOU SHOULD BRUSH EVERY MOR
TO HELP GET RID OF THE BACTER
PLAQUE THAT BUILDS-UP OVERNI
4 · TRUE 5 · TRUE
6 · FALSE–COLGATE JR. IS THE ONLY
TOOTHPASTE SHAPED LIKE A STA
© 1989 Colgate-Palmolive Co.

# The Bloodhound Gang

## The Case of the Story Stealer

By Becky Cheston




ILLUSTRATION BY BOB PEPPER

**"This** is heaven," thought Skip. He had his feet up on the desk and his nose buried in a Truman P. Loy mystery. It was a lazy summer day, and he had the office all to himself.

For about 10 seconds.

Just then, two women and a man burst into the office. "This is the detective agency, isn't it?" said one of the women. "We need—"

She stopped short. "Oh, no," she said, "you're reading that...."

Skip looked at the book in his hand, then quickly tossed it onto the desk. "Oh, sure I'm reading a Truman P. Loy mystery—but that's only because you guys haven't published anything in a while."

He stood up and stuck out his hand. "Gertrude Flanders, Maxwell Chambers, Sonia Burke—you're some of my favorite mystery writers! It's an honor to meet you."

"Thank you," answered Maxwell through clenched teeth. "But unless you catch Truman P. Loy, you won't read a new book by us again."

"I don't understand," said Skip.

"It's simple," said Sonia. "Mr. Loy, whoever he is, is stealing our books word for word!"

### A Book Crook

Sonia explained that each of their last novels had been turned down by their publisher. The reason? Truman P. Loy had already sent in the same book. And the publisher refused to tell them Truman P. Loy's real name.

After listening to the details of the case, Skip phoned Vikki and Ricardo. They made plans to visit each writer's house that afternoon. The first stop was Gertrude Flanders.

Gertrude showed them to a small cluttered study. After serving ice cold lemonade, she explained that she had no idea how her work could have been stolen.

"I say my stories out loud and my secretary writes them down," she explained. "He types them, and I make corrections. The book never leaves this room and I keep the door locked."

There was a knock at the door. In walked a young man with a green parrot on his shoulder.

"Arnold," said Gertrude, "the Bloodhound Gang. Arnold Wittle, my secretary. And that's my parrot, Edgar Allan Poe."

"Nevermore!" squawked the parrot.

"Arnold's going to be a fine mystery writer of his own, one day," Gertrude went on.

"Oh," Arnold mumbled, "I doubt that. Everything I write gets rejected."

"Arnold stole your book! Arnold stole your book!" screeched the parrot.

"Oh, Edgar," laughed Gertrude. "*Really.* Arnold has worked for us for years."

Vikki was examining the locks on the windows. They looked secure. She turned to Gertrude. "Who else has been in this room?"

"Practically no one," said Gertrude. But as the Gang questioned her, she came up with a number of suspects.

Ted Ryan, her agent, came by often. A housepainter had recently painted the whole house, including the study. Graham Travers, Gertrude's ex-husband and a mystery writer, came by once. And Joe and Ray, two college students who did housecleaning over the summer, cleaned Gertrude's house once a month.

Skip, who had been taking notes, now closed his notebook with a bang. Ricardo jumped.

"Nice going," snapped Ricardo.

"Sorry," said Skip. "Ms. Flanders, we'll get back to you as soon as we can."

## The Real Suspect

Four hours later, the Gang met in Skip's living room to go over the evidence they had collected so far. Like Gertrude, Maxwell Chambers and Sonia Burke had both guarded their new novels carefully.

"Read back our list of suspects," said Vikki.

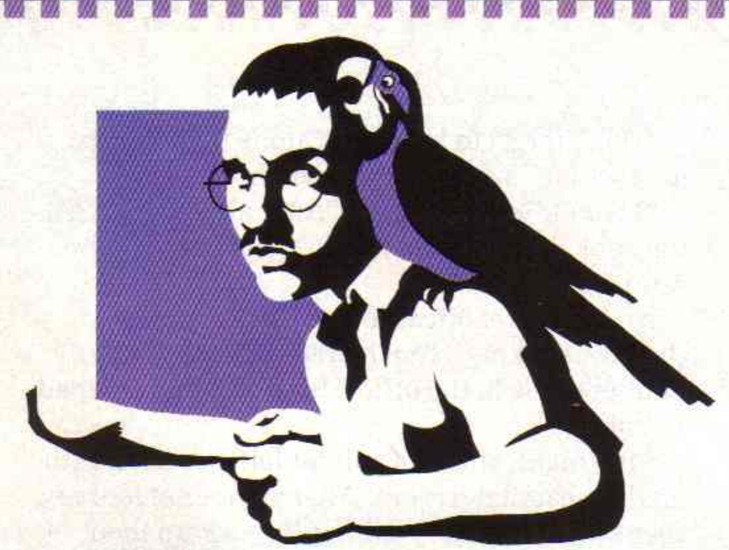
"It's a long one," said Skip.

Maxwell had told them that several people had been in his study while he was writing. Arnold, Gertrude's secretary, had done some typing for him. Ted Ryan, his agent, visited often. He had had his whole house repainted, including the study. And Joe and Ray came once a month, to clean.

Sonia Burke said her new boyfriend came by often—Graham Travers. Then there was her secretary, Matt. She had had her study repainted. Her agent, Fred Swift, visited twice.

"Whew," said Ricardo, wiping his forehead with his shirtsleeve. "Where do we start?"

"That's simple," said Vikki. "We only have one suspect!"



STOP—CAN YOU FIGURE OUT WHO VIKKI MEANS? WHO IS THE ONE SUSPECT WHO WAS NAMED BY *ALL THREE* WRITERS?

"One suspect!" said Ricardo. "Are you deaf?"

"I know what she's getting at," said Skip. "Whoever stole the books had to have been able to get into all three studies. So we can cross off anyone who isn't a suspect on all three lists." With Ricardo leaning over his shoulder, he took his pencil and started crossing off names. "That leaves..."

"The painter," cried Ricardo.

"Now all we need to figure out is how he does it," said Skip.

"And we need proof," added Vikki.

"Hmm," said Skip. "How much money do we have in our budget? I think it might be time to give our office a paint job."

## Laying a Trap

"The detective slowly opened the door to his office..." said Ricardo.

Skip scribbled furiously in his notebook, writing down everything Ricardo said. Behind him, a man stood on a ladder, painting. Ricardo glanced at the painter as he went on:

"The detective flicked on the light and almost gasped. But he was Max Diamond. It took more than the sight of a live 300-pound gorilla to make *him* gasp."

"That's great," said Skip.

The phone rang and Ricardo answered.

"How's it going?" Vikki asked on the phone.

"Hi, Bill," Ricardo said. Holding his hand over the receiver, he said to Skip, "It's my publisher." →

"Don't forget to leave him alone in the office for a while," said Vikki on the phone.

"I won't," said Ricardo. "After all, if I don't get the book done on time, I don't get my thirty thousand dollars, right?"

An hour later, Ricardo and Skip announced they were taking a lunch break. They left the painter alone in the office. Skip took his notepad with him.

That night, after the painter left, the Gang gathered to search the room. After an hour of looking, they still had found nothing. To pick up their spirits, Skip went out and bought soda pop for everyone.

"Ah," said Ricardo, guzzling cola, "this beats solving a case any day."



ILLUSTRATIONS BY BOB PEPPER

"I'm still convinced he planted a tape recorder somewhere in this room," said Vikki.

"Vikki," said Skip, "while we were writing, did you check out the painter's house?"

"Yeah. No one was home, so I couldn't get in. He's got a cool house, though."

"How so?" asked Ricardo, fanning himself with a magazine.

"His third floor looks like it has windows. But when you get up near the house you can see that the windows are just painted on the wall. It's a fine example of trompe l'oeil."

"Trump loy?" asked Ricardo.

"It's French," said Skip. "It means to deceive the eye. It's the name for the style of painting that creates an illusion of reality."

"Wait a minute," said Ricardo. "The author we're looking for calls himself Truman P. Loy."

"Trompe l'oeil!" said everyone together.

"But where does that get us?" said Ricardo.

Slurping the last of his soda pop, Skip lobbed the empty can at the trash basket under Vikki's desk. It hit with a thud and seemed to bounce off the air!

The Gang hurried to Vikki's desk. They found the leg space covered with a piece of painted cardboard.

"Look at that," said Ricardo, running his hand over the painting. "It looks just like the space under the desk. He painted the carpet and the wastebasket. He even put in the shadow for the underside of the desk. It looks real."

Skip pried off the cardboard. Behind it, on the floor under Vikki's desk, was a tape-recorder. The reels were slowly turning. The machine was recording.

"I'm going to call the police," said Vikki.

"What good will that do?" a voice asked.

Vikki whirled around. Standing in the doorway was Gertrude Flanders, with Poe, her parrot, on her shoulder.

"It *is* the painter," said Vikki. "And we've got proof."

"Now *that* is marvelous news," said Gertrude, smiling broadly.

"Marvelous!" chirped Poe.

"We've cleared up your mystery," said Skip, "but I bet you can't clear up this one." He handed her a notepad.

"What is it?" asked Gertrude.

"The mystery story Ricardo made up today!"




ILLUSTRATION BY DAVE FEBLAND

SQUARE ONE POKES FUN AT SUMMER VACATIONS

# CAT CHAT

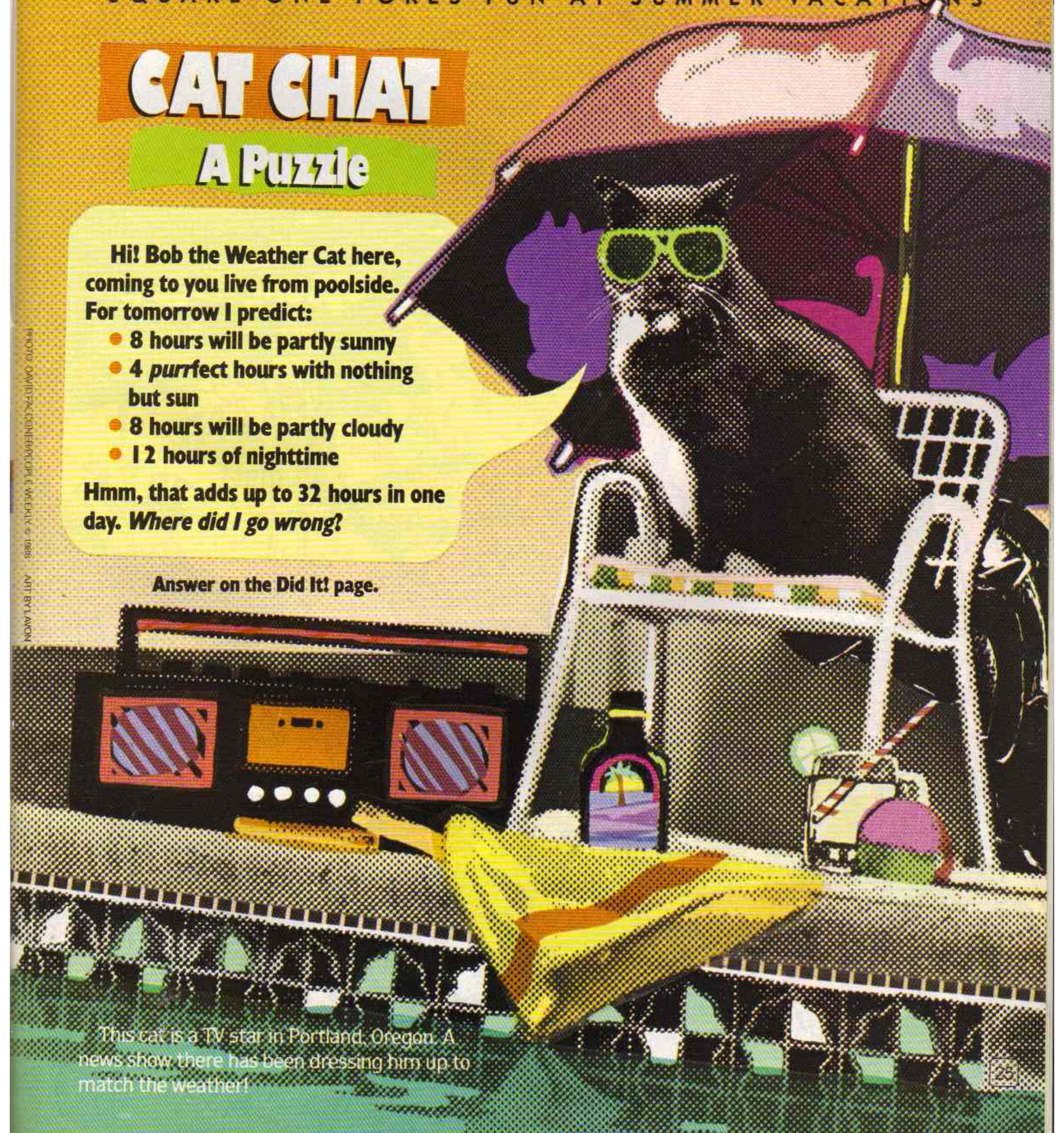
## A Puzzle

**Hi! Bob the Weather Cat here, coming to you live from poolside. For tomorrow I predict:**

- **8 hours will be partly sunny**
- **4 *purr*fect hours with nothing but sun**
- **8 hours will be partly cloudy**
- **12 hours of nighttime**

**Hmm, that adds up to 32 hours in one day. *Where did I go wrong?***

**Answer on the Did It! page.**



This cat is a TV star in Portland, Oregon. A news show there has been dressing him up to match the weather!

PHOTO: DAVID FALCONER/PEOPLE WEEKLY © 1988   ART BY LAVON

# WHAT'S WRONG WITH THIS PICTURE?

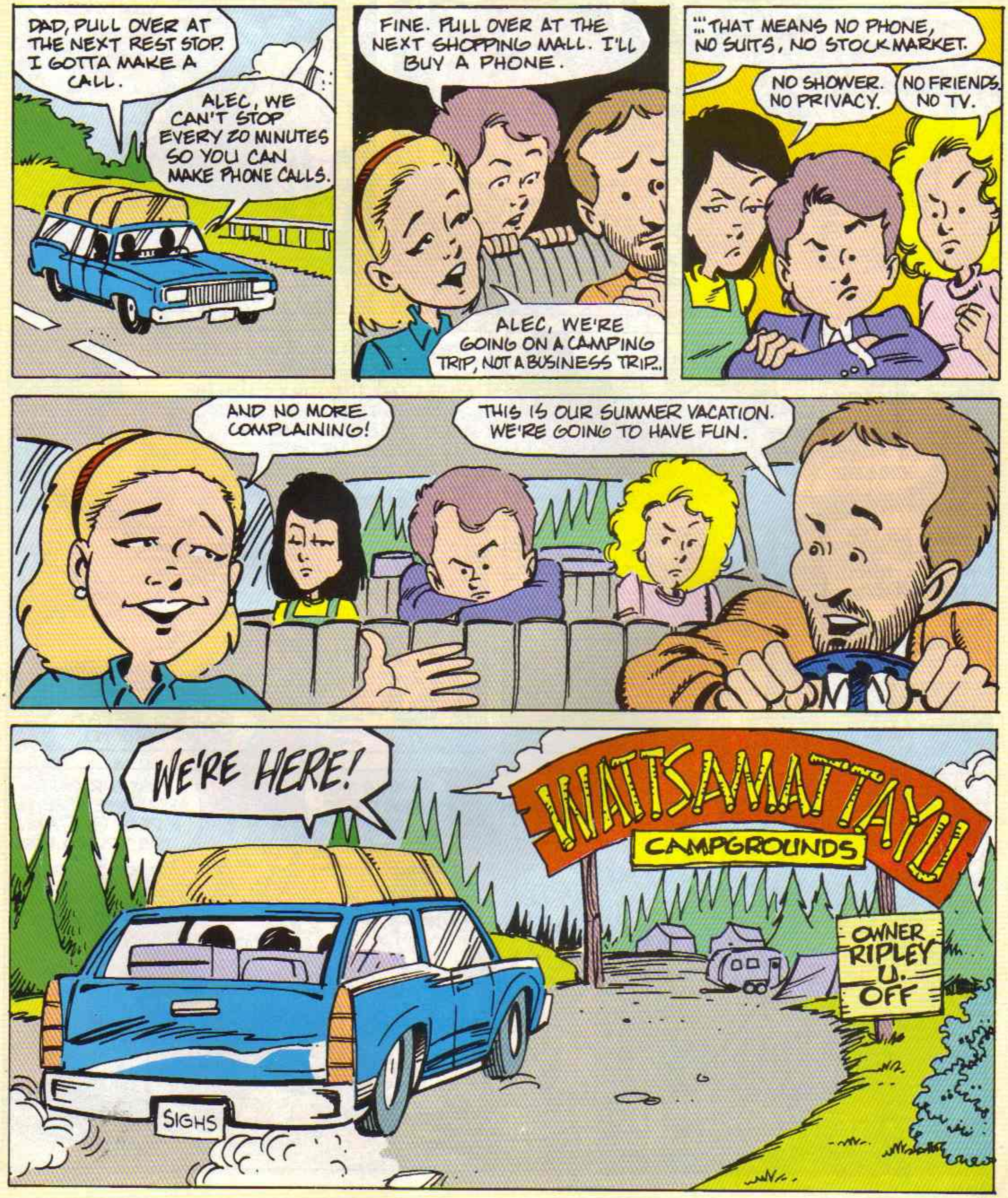
How many things can you find wrong in this scene? Answers on the Did It! page.

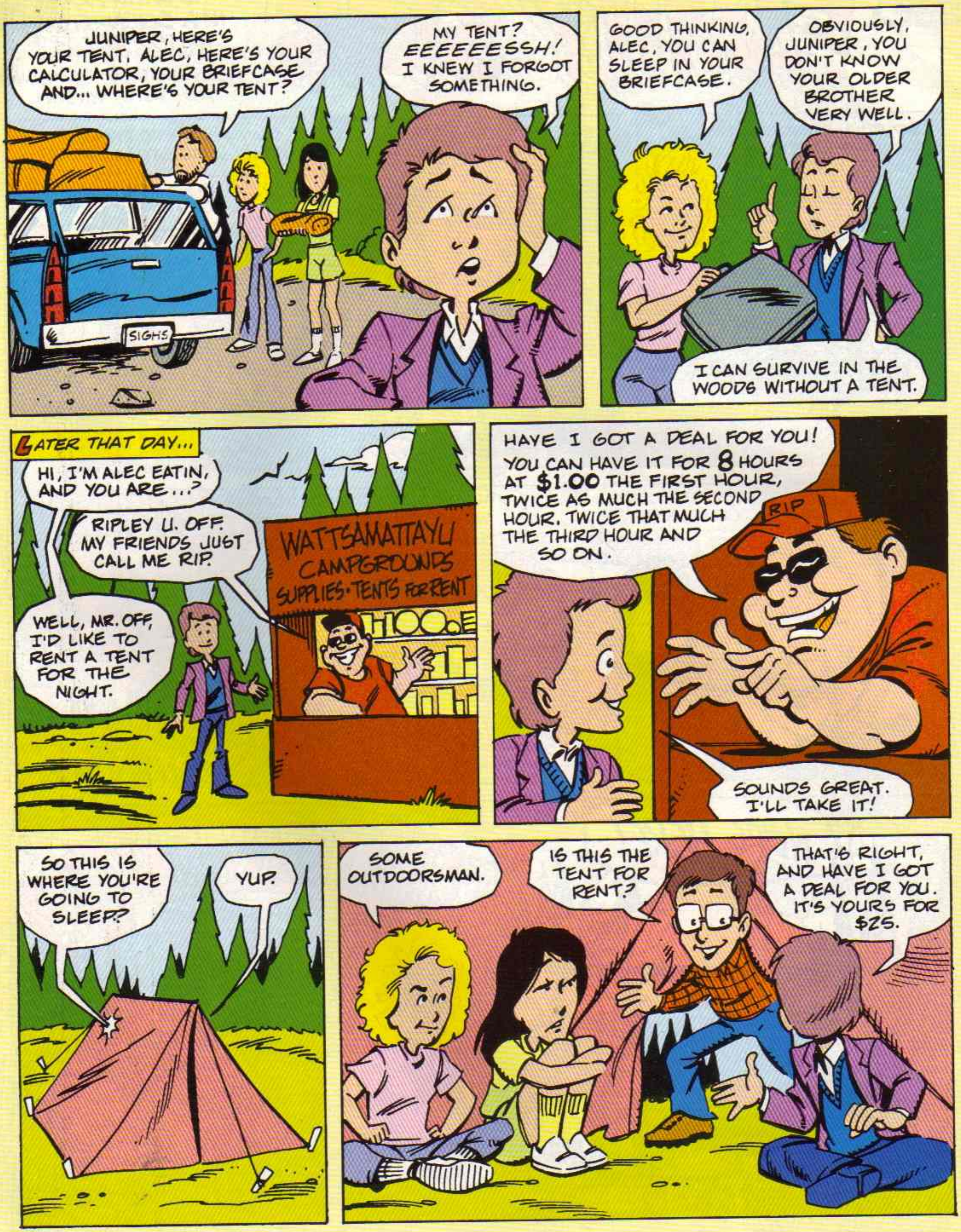


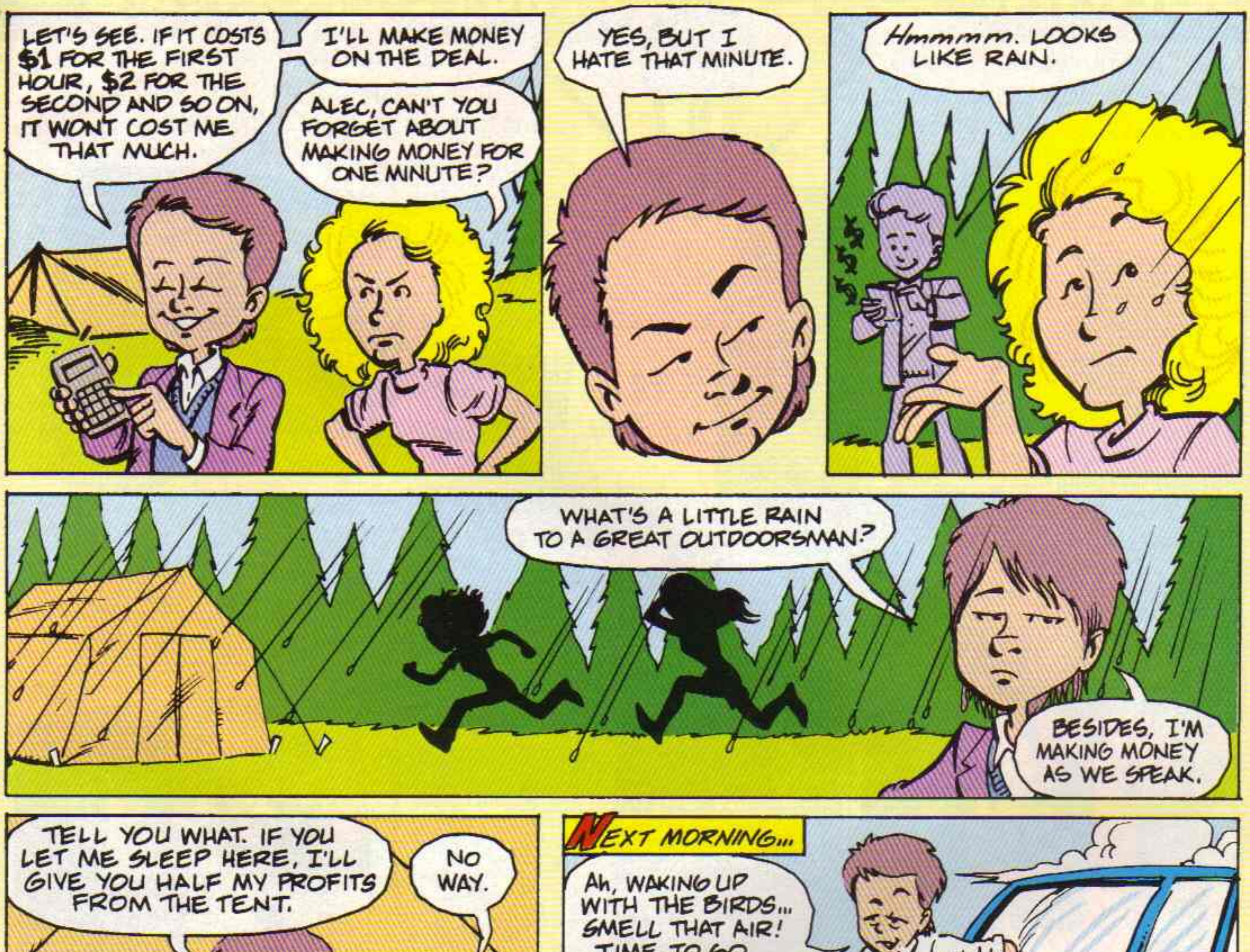
# FAMILY SIGHS

THE EATIN FAMILY IN A SQUARE ONE PUZZLE!

STORY: ELIZABETH KEYISHIAN
ART: KEITH WILSON




JUNIPER, HERE'S YOUR TENT. ALEC, HERE'S YOUR CALCULATOR, YOUR BRIEFCASE AND... WHERE'S YOUR TENT?
SIGHS
MY TENT? EEEEEEESSH! I KNEW I FORGOT SOMETHING.
GOOD THINKING, ALEC, YOU CAN SLEEP IN YOUR BRIEFCASE.
OBVIOUSLY, JUNIPER, YOU DON'T KNOW YOUR OLDER BROTHER VERY WELL.
I CAN SURVIVE IN THE WOODS WITHOUT A TENT.
LATER THAT DAY...
HI, I'M ALEC EATIN, AND YOU ARE...?
RIPLEY U. OFF. MY FRIENDS JUST CALL ME RIP.
WELL, MR. OFF, I'D LIKE TO RENT A TENT FOR THE NIGHT.
WATTSAMATTAYU CAMPGROUNDS
SUPPLIES • TENTS FOR RENT
HAVE I GOT A DEAL FOR YOU! YOU CAN HAVE IT FOR 8 HOURS AT $1.00 THE FIRST HOUR, TWICE AS MUCH THE SECOND HOUR, TWICE THAT MUCH THE THIRD HOUR AND SO ON.
RIP
SOUNDS GREAT. I'LL TAKE IT!
SO THIS IS WHERE YOU'RE GOING TO SLEEP?
YUP.
SOME OUTDOORSMAN.
IS THIS THE TENT FOR RENT?
THAT'S RIGHT, AND HAVE I GOT A DEAL FOR YOU. IT'S YOURS FOR $25.



LET'S SEE. IF IT COSTS $1 FOR THE FIRST HOUR, $2 FOR THE SECOND AND SO ON, IT WON'T COST ME THAT MUCH.
I'LL MAKE MONEY ON THE DEAL.
ALEC, CAN'T YOU FORGET ABOUT MAKING MONEY FOR ONE MINUTE?
YES, BUT I HATE THAT MINUTE.
Hmmmm. LOOKS LIKE RAIN.
WHAT'S A LITTLE RAIN TO A GREAT OUTDOORSMAN?
BESIDES, I'M MAKING MONEY AS WE SPEAK.
TELL YOU WHAT. IF YOU LET ME SLEEP HERE, I'LL GIVE YOU HALF MY PROFITS FROM THE TENT.
NO WAY.
NEXT MORNING...
Ah, WAKING UP WITH THE BIRDS... SMELL THAT AIR! TIME TO GO COLLECT MY PROFIT.
ULP!
SAY ALEC, IF THAT WAS YOUR DEAL WITH RIP U. OFF, YOU DIDN'T MAKE ANY PROFIT AT ALL.
IN FACT, YOU'RE GOING TO HAVE TO SELL YOUR BRIEF-CASE AND CALCU-LATOR TO PAY HIM.
BILL
thanx RIP
RIP U. OFF RIPPED ALEC OFF.
CAN YOU FIGURE OUT HOW MUCH ALEC OWES?
ANSWER ON THE DID IT! PAGE.

# SQUARE ONE WANTS TO KNOW

Before they left for summer vacation, we asked some kids, "What's your favorite brain teaser?"

Can you solve these summertime stumpers? If you can't, take a trip to the Did It! page for the answers.



**1**

**PETER KONG**

You're riding in a bus that is facing west. After an hour, you're 50 miles east of where you started. How could this happen?



**2**

**KRISTIAN QUADRINI**

Which weighs more: A pound of sand or a pound of sea water?



**3**

**COCO JERVIS**

Ruth, Amy and Eve are the only people on a beach. Amy's mother is there. So is Eve's. Amy and Eve are not sisters. How can this be?



**4**

**ELIZABETH KING**

It costs 3¢ to make a glass of lemonade. You make 50 glasses and sell them all for 10¢. What's your profit?



**5**

**FRANK LeDONNE**

Which month has 28 days?



**6**

**NELSON COLLAZO**

Put two X's into this equation so that both sides are equal: 2 3 0 = 5 1 0

PHOTOGRAPHY BY RICHARD HUTCHINGS

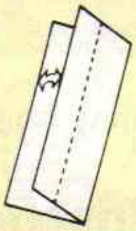
*Pack your bags and get ready for another...*

# SQUARE ONE FOLD-IN

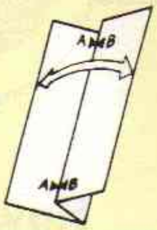
Eric and Ray are trying to get to the Poison Ivy Campgrounds. But there's something wrong with their directions! By studying the directions, can you figure out where they'll end up? For the answer, fold in the page as shown.

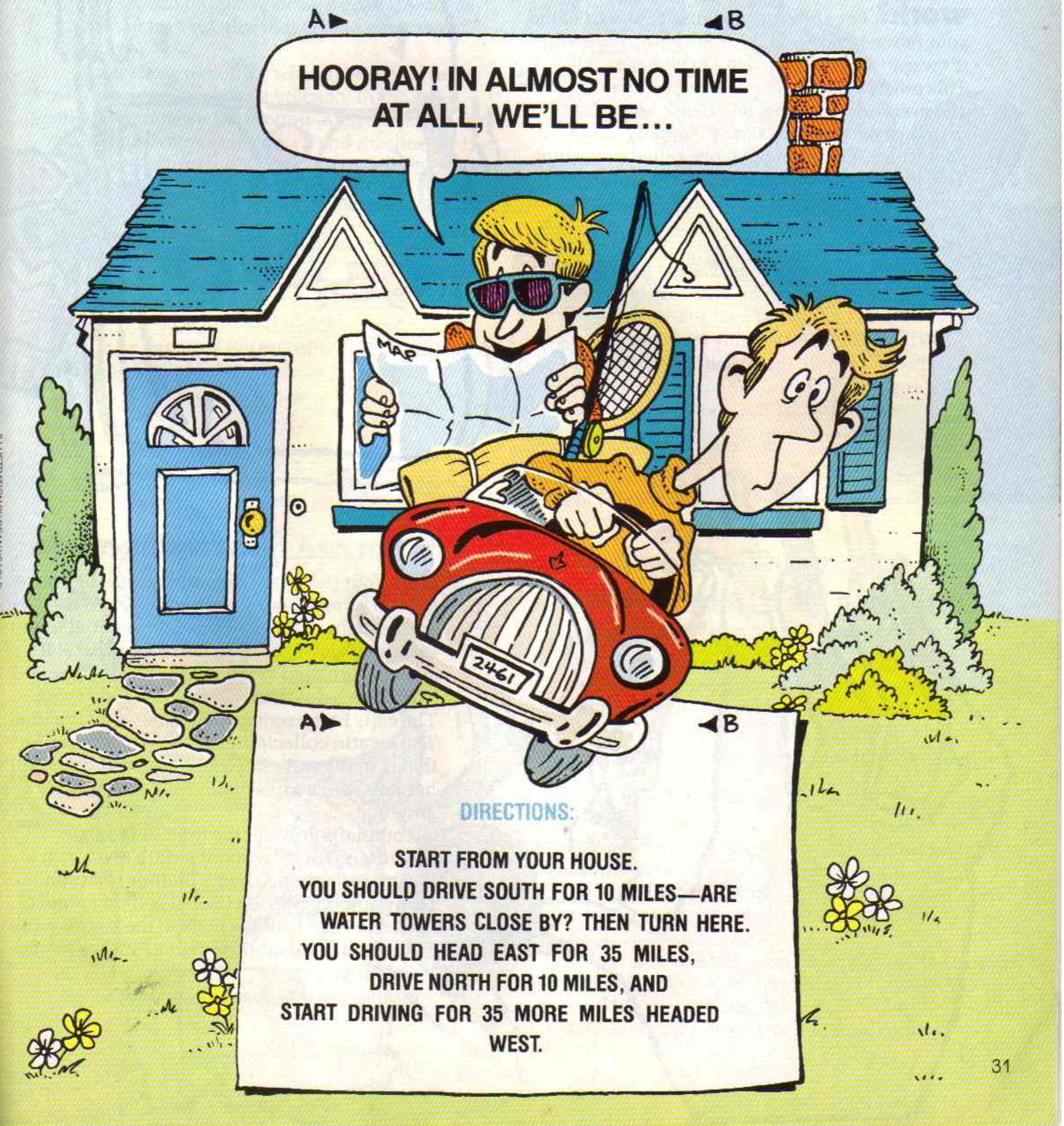
HOW TO FOLD IT:

1) Fold the page in half like this:



2) Grab the top left corner and fold back in half again so that "A" is next to "B" like this:



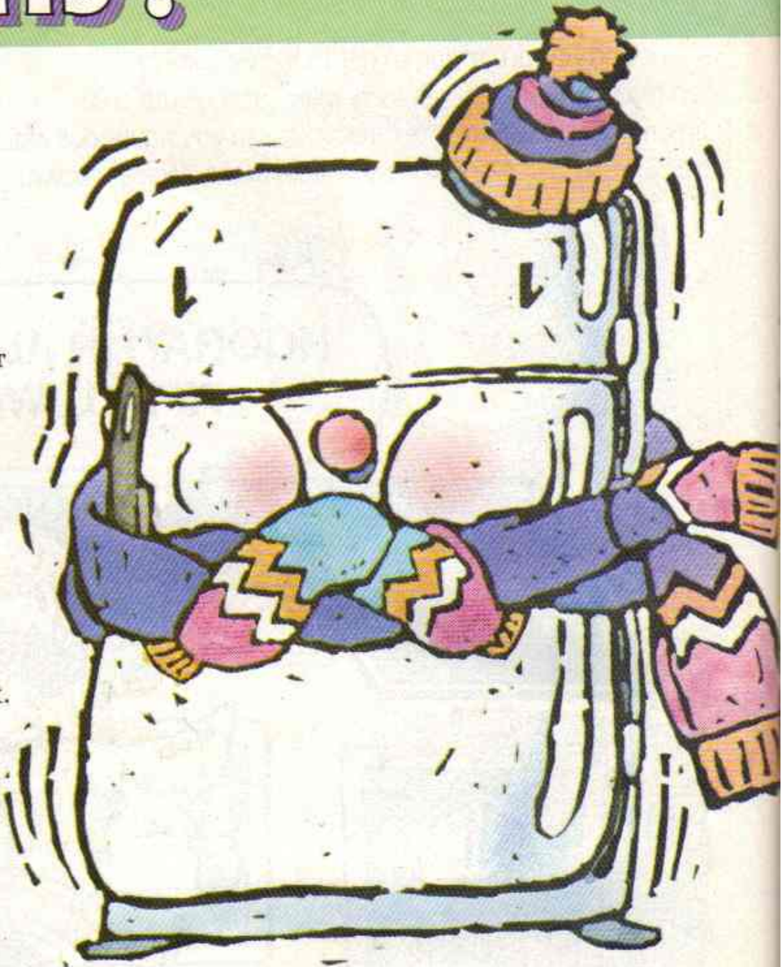

**DIRECTIONS:**

START FROM YOUR HOUSE.
YOU SHOULD DRIVE SOUTH FOR 10 MILES—ARE WATER TOWERS CLOSE BY? THEN TURN HERE.
YOU SHOULD HEAD EAST FOR 35 MILES,
DRIVE NORTH FOR 10 MILES, AND
START DRIVING FOR 35 MORE MILES HEADED WEST.

ILLUSTRATION BY DEAN YEAGLE

# Any Questions?

by Penny Kaganoff



## How does a refrigerator work?

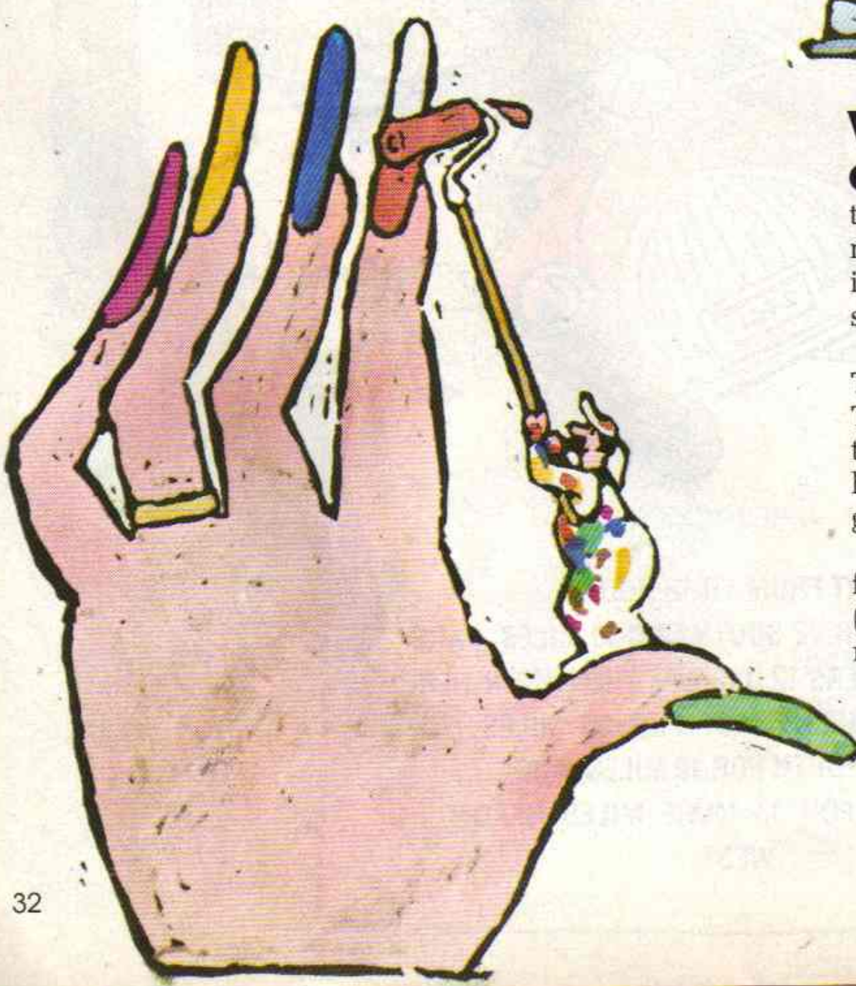
For a clue to your answer, reach behind your refrigerator. Feel the air near the coils there. It's warm! Those warm coils are part of a cycle. This process takes heat right out of your refrigerator and everything in there, too. Here's how:

Orange juice and milk aren't the only liquids in your fridge. There's another one called *refrigerant*. This liquid travels through the pipes inside. At one point along the way, it changes into a gas. As it evaporates, it absorbs heat from the food inside. That cools everything off.

Now the cycle continues. The gas goes through more pipes to another part of the refrigerator. There it will be changed back to a liquid refrigerant. After that happens it is ready to absorb more heat.

What happens to the heat already collected? That is passed right out the back of the refrigerator! Pretty cool, huh?

*Question sent in by Sarah Hauschild, Tacoma, WA.*



## What are fingernails made of?

Your nails are hard and tough. They have to be to protect your fingers and toes. What makes them so tough? The same material found in animal claws, hooves, horns and beaks! It's something called keratin (KER-uh-tin).

Hidden below each of your nails is its root. The cells in the root give off keratin all the time. The keratin collects and pushes up old keratin that is in the way. As it does, the stuff dries and hardens into a solid plate. Your nails are growing!

Your nails grow all the time. A typical fingernail will grow about a sixth of an inch (.4 cm) in a month. Over a lifetime, that can really add up. Shridar Chillal is living proof of that. He hasn't cut his nails in the last 29 years. His thumbnail alone is over 27 inches (68.6 cm) long!

*Question sent in by Gena Beevers, Magnolia, AR.*

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

**Any Questions?**
**3-2-1 CONTACT**
**P.O. Box 40**
**Vernon, NJ 07462**




## What is petrified wood?

When a tree dies, it usually decays and disappears. Under special circumstances, a dead tree turns into stone instead. But that takes a *very, very* long time.

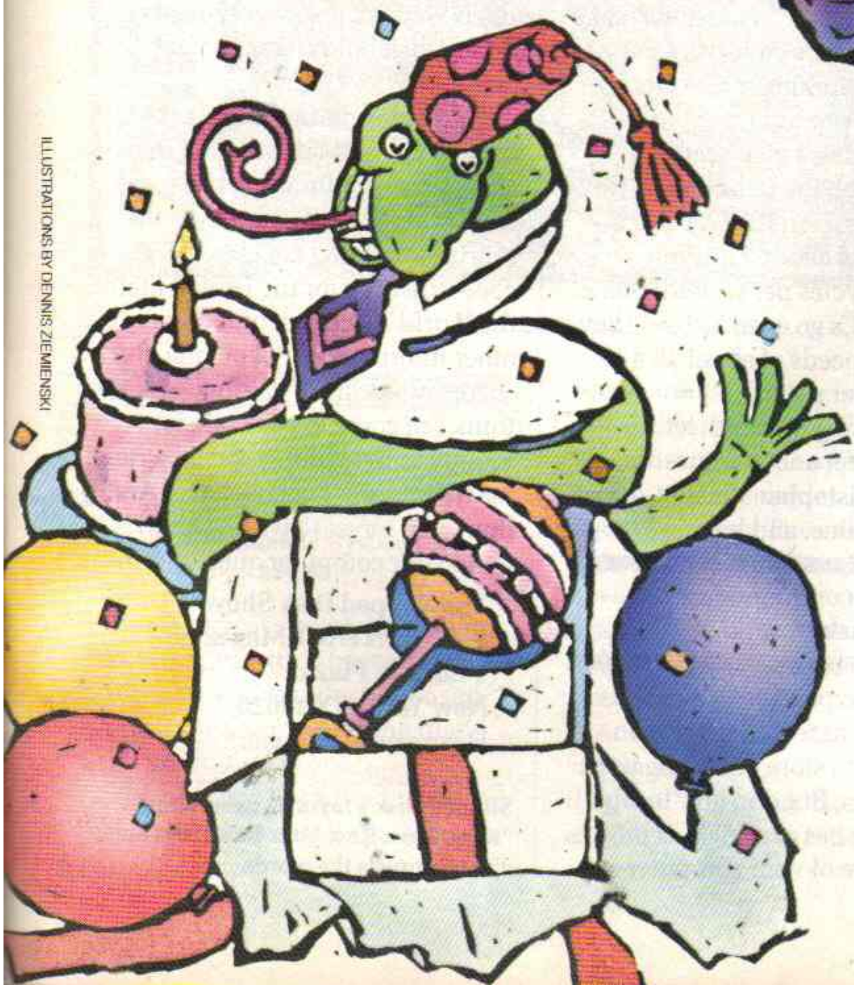
Wood starts to petrify when it is buried in the sand, mud or ash from a volcano. In the same area, the water in the ground must be rich in minerals. This water seeps down and reaches the tree.

Minerals from the water begin to fill the empty cells in the decaying wood. Layers of minerals collect there. But the rest of the water continues to sink deeper into the ground. More and more dried-up minerals build up. Finally, they become solid stone.

Petrified wood is a kind of fossil. Like most fossils, it is very old. Some of the wood in Arizona's Petrified Forest National Park is 150 *million* years old.

*Question sent in by Carrie Osborne, Mesa, AZ.*

ILLUSTRATIONS BY DENNIS ZIEMIENSKI



## Can you tell how old a rattlesnake is by counting the beads on its rattle?

Who wants to get close enough to find out! Actually, a snake's rattle is a clue to its age. A young snake starts out with one bead on its rattle. As the snake grows, it sheds its skin. Everytime this happens, a new bead is added to the rattle.

You can't use the beads to tell the exact age, however. For one thing, a snake sheds its skin three or four times a year. It all depends on how fast it's growing. If that weren't confusing enough, there is the old age problem. After a few years, a rattler's beads start to get old and brittle. Some of them fall off.

So, a snake's rattle can only tell you two things for sure. The first is that the snake is a rattler. And the second? Stay clear!

*Question sent in by Martin Meyer, Bloomington, IN.*

# The Slipped Disk Show

COMPUTER QUESTIONS AND ANSWERS




ILLUSTRATION BY CAMERON EAGLE

Greetings to all you computer coconuts! This is your buddy, Slipped Disk, the world-famous computer expert. Here's another column full of computer advice, words of wisdom and 14 different useful things to make out of those old oatmeal boxes you've been saving.

Speaking of boxes, my dog, Floppy, is busy packing a few. This summer I'm sending him to Camp Poocheehaha. They have great activities—sock chewing, barking at cars, and a four-hour nap every afternoon. I think he's going to love it. I know I did when I was a kid.

And speaking of kids, here's a question from one. She's **Kelsey Dashiell**, 11, from Queens, New York, and she wants to know:

**"How do people measure how fast a computer is?"**

Well, Kelsey, one way is to put a computer on a racetrack and see how long it takes for it to travel 400 meters. But that's probably not what you mean. You mean, how do you measure how fast a computer can compute?

There are several ways to measure a computer's speed. One way is to give two computers the same job to do and see how long it takes them to complete it. For example, you could give two computers the same list of numbers to add and see which one finished first.

Another way of telling how fast a computer works is by *clock speed*. You probably know that inside a computer there are millions of electronic bits—you can think of them as very tiny light bulbs that are either "on" or "off." These bits make up the computer's code. When a computer is working, these bits are changing very quickly.

The computer's *clock* sets the speed at which the bits change. How fast do they go? An IBM XT has a clock speed of about 5 *million* changes or *cycles* per second! Some of the new PCs go even faster—they have clock speeds of about 16 million cycles per second.

And speaking of speed, let's quickly answer another question. It's from **Christopher Vincent**, 13, of Standish, Maine, and he asks:

**"How much computer data can a compact disk store?"**

The same type of compact disks that are used to record music can also be used to store data to be used by computers. But don't try to slip your favorite heavy metal CD into the disk drive of your computer—you need a special CD ROM drive to hook up to your PC. The CD stands for compact disk and the ROM stands for Read Only Memory. Unlike floppy disks, you can't record anything on a CD.

A CD for a computer can hold approximately 512 *megabytes* of information. That's more than 512 *million* letters and numbers or about 100,000 typed pages. A typical floppy disk holds less than one megabyte.

The Microsoft Company publishes a CD ROM disk called *Bookshelf* which includes all the information in a dictionary, a thesaurus, a spelling checker, the zip code directory for the United States, the *World Almanac*, plus some other information. All on one disk!

And speaking of dictionaries, I think I'm going to pack one for Floppy to help him when he writes me from Camp Poocheehaha. And don't you forget to write, either! Send your computer questions to:

**The Slipped Disk Show**
**3-2-1 CONTACT Magazine**
**1 Lincoln Plaza,**
**New York, NY 10023**

Have a great summer!

**Slipped Disk's favorite camp song is "Row, Row, Row Your Boat," but he always forgets the words.**

# Reviews



## Books

### Gruesome Games

**By Shoo Rayner**
**Peter Bedrick Books**
**$12.95**

Watch out! This book is full of games—and the games are full of monsters! All you need are dice, some coins and a few friends. Then you'll be ready to take on Count Dracula, snakes, ghosts, mummies and the Big Bad Wolf.

In the game "Rat Race," the object is to get to the city dump without being eaten by crocodiles. In "Pharaoh's Curse," you try to be the first player to escape from a pyramid. Some of the games only need one person to play. Others can be played by as many as eight people at one time. There are 12 different games in all.

"Gruesome Games" isn't really scary. In fact, we thought that most of it was very silly. But you'll have hours of fun with this big book of games. —*Russell Ginns*




### Rewind to Yesterday

**by Susan Beth Pfeffer**
**Delacorte Press**
**$13.95**

When the Forrest family gets a VCR, 11-year-old Kelly and her twin brother Scott are delighted. At last they'll be able to tape their favorite TV series. And Mom is thrilled because she can tape old Humphrey Bogart movies.

But as Kelly discovers, there's more to the family's VCR than just taping TV shows. The machine's rewind button can send people 24 hours back in time!

The only ones who know about the machine's amazing power are Scott and Kelly's best friend, Miri. At first, the young explorers just goof around with time travel. But then Miri's grandfather is shot in a hold-up. Can the kids go back in time and change the course of events to help save Pop? You'll have to read this funny, exciting and well-written book to find out!—*Jonathan Rosenbloom*

## Software

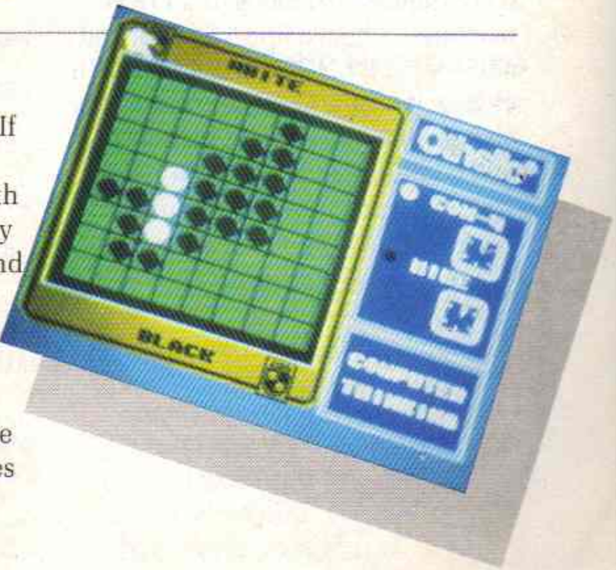
### Othello

**Acclaim Software**
**For Nintendo Systems**
**$34.95**

Here's a great strategy game that you can play with a friend or against your computer. It's based on the popular board game that's been around for years.

The object is to be the player that controls the most space on the board. Each turn, you place one of your pieces on the board. If you surround your opponent's pieces, you can replace them with your own ones. The rules are easy to learn. But if you and your friend are an even match, or if you play against the computer opponent, *Othello* will challenge you for years.

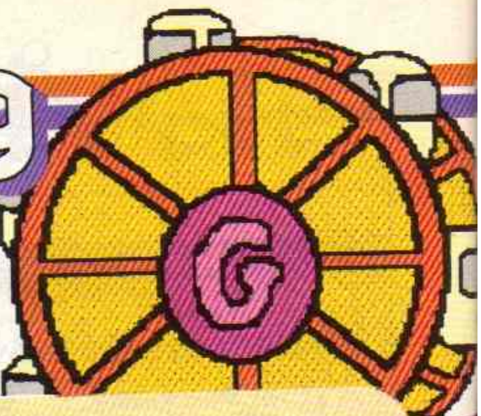
At last! Software companies are starting to design Nintendo games that challenge your brain as well as your reflexes. —*R.G.*



# Basic Training

PROGRAMS FOR YOUR COMPUTER





## Confusing But Amusing

Now that you've read about the latest amusement park rides, here's a very strange amusement park of your own. In this confusing but amusing game, the aim is to get out of the amusement park. But there's a catch. There's a man at the gate who won't let you out without the password.

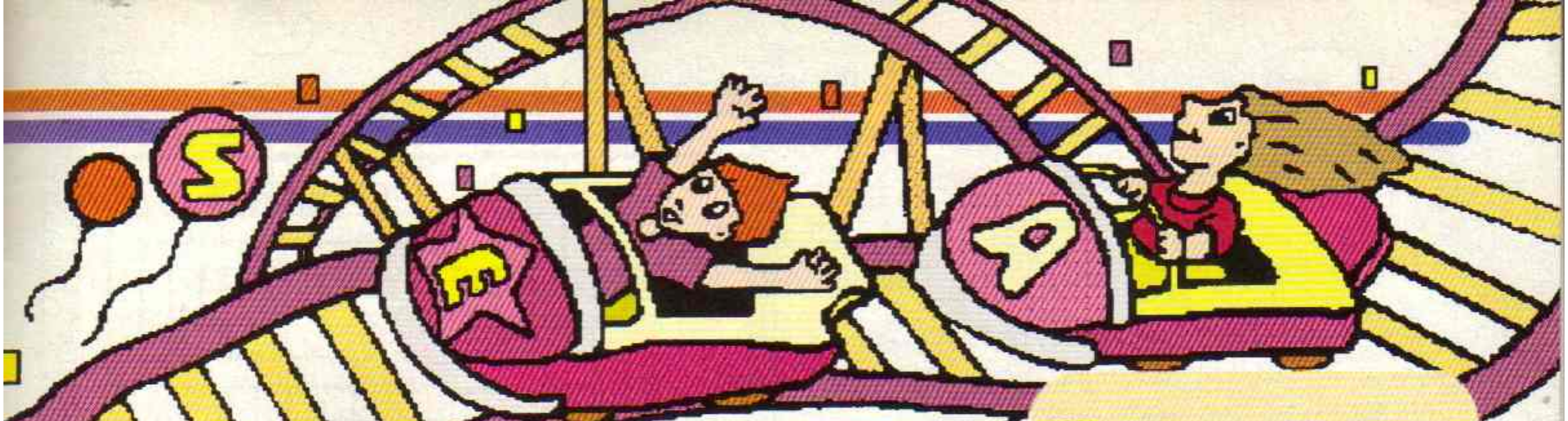
The password is a five-letter word and the letters have been scattered in the rides of the park. When you go on the rides, keep your eyes open and maybe you'll see them. Some rides may have no letters, others may have more than one. It's different every time you play. (So is the password.)

If you get the five letters but can't figure out the word, try going to Mix and Match. There's a computer there that will help you. And keep track of your money and how you're feeling. Too many rides can make you sick.

The program is written for Apple II computers. To change it for IBM machines, change line 5 to CLS, and add line 12 RANDOMIZE TIMER. To change it for the Commodore 64/128, change line 5 to PRINT CHR$(147), and add line 12 J=RND (-TI).

### Apple II

```
1    GOTO 10
5    HOME
8    RETURN
10   DIM W$(15), R$(5,5), C(5)
15   TIME1 = 4000: TIME2 =
     3000
20   N = 25: I = 1
30   FOR X = 1 TO 15
40   READ A$ : W$(X) = A$
50   NEXT X
60   FOR X = 1 TO 5
70   FOR Y = 1 TO 5
80   R$(X,Y) = "":C(X) = 1
90   NEXT Y: NEXT X
100  W = INT (RND(1) * 15) + 1
110  FOR X = 5 TO 1 STEP - 1
120  D = 1
130  Y = INT(RND(1) * 5) + 1
140  IF R$(Y,D) <> "" THEN D =
     D + 1: GOTO 140
150  R$(Y,D) = MID$(W$(W),X,1):
     PRINT R$(Y,D);
160  NEXT X
170  GOSUB 5
180  IF I > 5.5 THEN 1350
190  PRINT "CONFUSING
     AMUSING PARK"
200  PRINT: PRINT
     TAB(5);"RIDE",,"COST"
210  PRINT "1) TWIRLING
     TERROR","5.00"
220  PRINT "2) REPULSIVE
     ROLLER","2.00"
230  PRINT "3) HAUNTED
     HORROR ","3.00"
240  PRINT "4) SOGGY SLIDE",
     "1.00"
250  PRINT "5) MIX AND
     MATCH", "2.00"
260  PRINT "6) DEADLY DROP",
     "1.00"
270  PRINT "7) LET ME OUTTA
     HERE!"
280  PRINT: PRINT "YOU HAVE
     $";N
290  GOSUB 1410
300  PRINT "YOU FEEL ";I$
310  PRINT: PRINT "PICK A RIDE
     BY NUMBER"
320  INPUT P$
330  P = VAL(P$)
340  ON P GOTO 360,490,640,
     770,880,1150,1250
350  GOTO 170
360  REM TWIRLING TERROR
370  GOSUB 5 : IF N< 5 THEN
     1380
380  N = N - 5:I = I + .7
390  PRINT "YOU ARE
     STRAPPED INTO A SMALL
     CAR"
400  PRINT "IT RISES INTO THE
     AIR"
410  PRINT "YOU START
     SPINNING"
420  PRINT "SUDDENLY IT
     STOPS AND YOU DROP."
430  IF R$(1,C(1)) = "" THEN 460
440  PRINT "THE LETTER " ;
     R$(1,C(1));" FLASHES BY."
450  C(1) = C(1) + 1
460  PRINT "LUCKILY, THE CAR
     STOPS FIVE INCHES FROM
     THE GROUND"
470  FOR DE = 1 TO TIME1:
     NEXT DE
480  GOTO 170
490  REM REPULSIVE ROLLER
500  GOSUB 5: IF N < 2 THEN
     1380
510  N = N - 2: I = I + .5
520  PRINT "YOU SIT IN THE
     FRONT SEAT"
530  PRINT "OF A GLEAMING
     ROLLER COASTER"
540  PRINT "SLOWLY, IT ROLLS
     UPHILL"
550  PRINT "YOUR STOMACH
     RISES AS YOU DROP"
560  PRINT "YOU HEAR
     SOMEONE SCREAMING"
570  IF R$ (2,C(2)) = "" THEN
     600
580  PRINT "THE LETTER ";
     R$(2,C(2)); " FLASHES BY"
590  C(2) = C(2) + 1
600  FOR DE = 1 TO TIME2:
     NEXT DE
610  PRINT "THE RIDE STOPS
     AND YOU STUMBLE OUT."
620  FOR DE = 1 TO TIME1:
     NEXT DE
630  GOTO 170
640  REM HAUNTED HORROR
650  GOSUB 5: IF N < 3 THEN
     1380
660  N = N - 3: I = I + .5
```



```
670  PRINT "YOU WALK INTO A
     DUNGEON"
680  PRINT "WEIRD NOISES FILL
     THE AIR"
690  FOR DE = 1 TO TIME2:
     NEXT DE
700  PRINT "A COFFIN OPENS
     AND A SKELETON LUNGES
     AT YOU."
710  PRINT "YOU SCREAM IN
     FRIGHT."
720  IF R$(3,C(3)) = "" THEN 750
730  PRINT "YOU SEE THE
     LETTER ";R$(3,C(3));" IN
     THE COFFIN."
740  C(3) = C(3) + 1
750  FOR DE = 1 TO TIME1:
     NEXT DE
760  GOTO 170
770  REM SOGGY SLIDE
780  GOSUB 5: IF N < 1 THEN
     1380
790  N = N - 1: I = I + .4
800  PRINT "YOU CLIMB A
     LADDER TO THE TOP OF A
     SLIDE."
810  PRINT "DOWN YOU DROP
     THROUGH WAVES OF
     WATER."
820  IF R$(4,C(4)) = "" THEN 850
830  PRINT "THE LETTER ";
     R$(4,C(4)); " FLASHES BY."
840  C(4) = C(4)) + 1
850  PRINT "YOU FALL INTO A
     LARGE POOL."
860  FOR DE = 1 TO TIME1:
     NEXT DE
870  GOTO 170
880  REM MIX AND MATCH
890  GOSUB 5: IF N< 2 THEN
     1380
900  N = N - 2
910  PRINT "YOU ARE IN A
     SMALL DARK ROOM."
920  PRINT "THERE IS A
     COMPUTER SCREEN ON
     THE WALL."
930  PRINT "ENTER LETTERS
     TO BE MIXED."
940  INPUT M$
950  IF LEN(M$) = 5 THEN 980
960  PRINT "WRONG NUMBER
     OF LETTERS"
970  GOTO 1130
980  X = 1: Y = 1
990  IF MID$ (W$(W),X,1) =
     MID$(M$,Y,1) THEN 1020
1000 Y = Y + 1: IF Y <= 5 THEN
     990
1010 GOTO 1040
1020 Y = 1:X = X + 1: IF X <= 5
     THEN 990
1030 GOTO 1060
1040 PRINT "SORRY, WRONG
     LETTERS"
1050 GOTO 1130
1060 FOR X = 1 TO 30
1070 Z$ = ""
1080 FOR Y = 1 TO 5
1090 Z = INT(RND(1) * 5) + 1
1100 Z$ = Z$ + MID$(M$,Z,1)
1110 NEXT Y: PRINT Z$: NEXT X
1120 PRINT: PRINT "THE WORD
     IS:";W$(W)
1130 FOR DE = 1 TO TIME2:
     NEXT DE
1140 GOTO 170
1150 REM DEADLY DROP
1160 GOSUB 5: IF N < 1 THEN
     1380
1170 N = N - 1: I = I + .3
1180 PRINT "YOU CLIMB ON TOP
     OF A TABLE."
1190 PRINT "SOMEONE PUSHES
     YOU OFF."
1200 IF R$(5,C(5)) = "" THEN
     1230
1210 PRINT "YOU SEE THE
     LETTER ";R$(5,C(5)); " ON
     THE TABLE."
1220 C(5) = C(5) + 1
1230 FOR DE = 1 TO TIME1:
     NEXT DE
1240 GOTO 170
1250 GOSUB 5: REM EXIT
1260 PRINT "A MAN AT THE
     GATE STOPS YOU."
1270 PRINT "HE ASKS FOR THE
     PASSWORD:"
1280 INPUT P$
1290 IF P$ = W$(W) THEN 1330
1300 PRINT "SORRY, THAT'S
     NOT IT."
1310 FOR DE = 1 TO TIME1:
     NEXT DE
1320 GOTO 170
1330 PRINT "YOU'RE OUT!!"
1340 GOTO 1360
1350 PRINT "YOU'RE TOO SICK
     TO GO ON."
1360 PRINT "GAME OVER"
1370 END
1380 PRINT "NOT ENOUGH
     MONEY"
1390 FOR DE = 1 TO TIME2:
     NEXT DE
1400 GOTO 170
1410 ON I GOTO 1420,1430,1440,
     1450,1460
1420 I$ = "FINE":GOTO 1470
1430 I$ = "FAINT":GOTO 1470
1440 I$ = "VERY SICK":GOTO
     1470
1450 I$ = "READY TO
     VOMIT":GOTO 1470
1460 I$ = "YOU CAN'T TAKE
     ANYMORE"
1470 RETURN
1480 DATA LUNCH,THING,
     DROOP,CRUMB,HIKES
1490 DATA KITES,GAMES,
     WRING,CLOCK,PLUSH
1500 DATA PITCH,MINER,
     ALONG,BREAK,SHARK
```

ILLUSTRATION BY MARTIN LEMELMAN

## Send Us Your Programs

If you've written a program you'd like us to print, send it in. If we like it, we'll print it and send you $25. Include a note telling us your name, address, age, T-shirt size and type of computer.

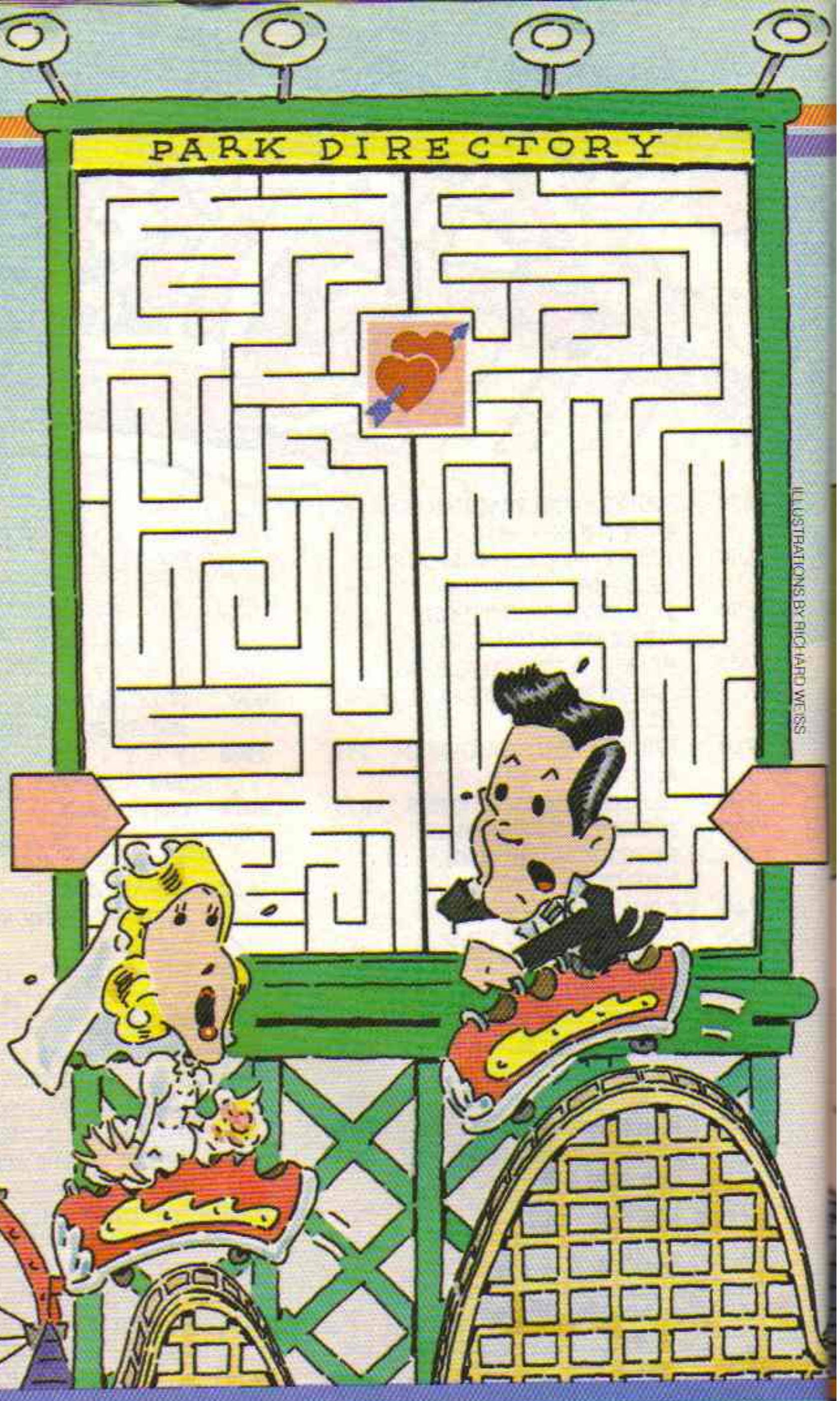
All programs must be your own original work. We cannot return programs. Please do not send disks.

Send your program to:
**Basic Training**
**3-2-1 CONTACT Magazine**
**1 Lincoln Plaza**
**New York, NY 10023**

# Extra!

by Russell Ginns

Some people love puzzles, they can't get enough. That's why this month's Extra! has so much stuff.

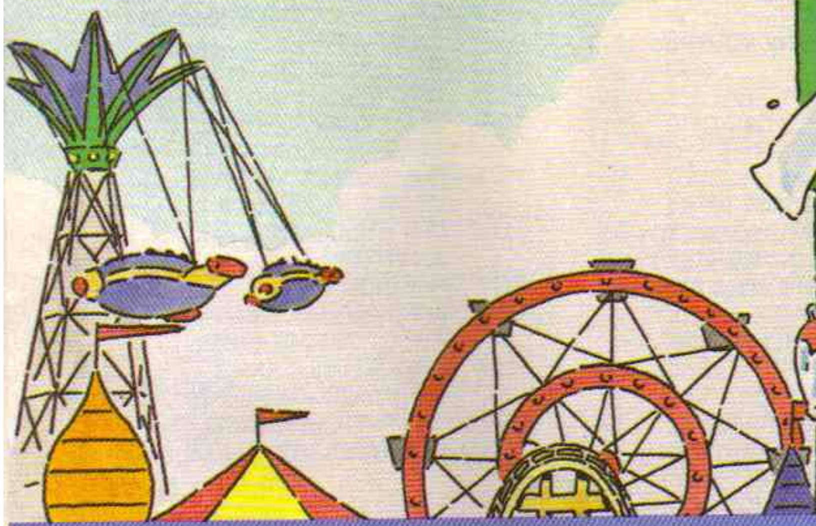



ILLUSTRATIONS BY RICHARD WEISS

## Lost Lovers

Mattie and Gus want to get married in the center of the big maze at the amusement park. But they're lost! Can you help each of them find their way to the center so they can begin a life of wedded happiness?

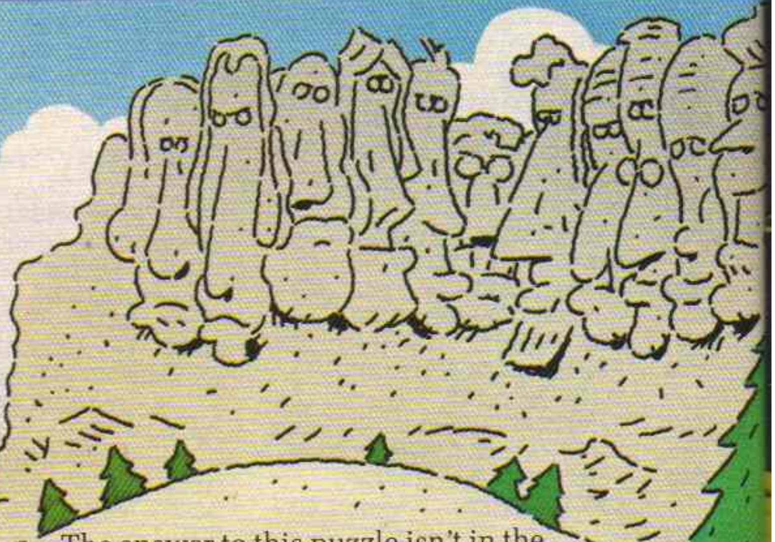
If you can't solve the maze, find your way to the **Did It! page.**



## Hail to the Chief?

In honor of Independence Day, July 4th, we've put together a list of some famous and not-so-famous Presidents of the United States. We've also included some people who were never President. Can you spot the five impostors?

George Washington
James Madison
Milton Bradley
John Quincy Adams
Reggie Jackson
Martin van Buren
Mildred Pierce
William Henry Harrison
Doodles P. Washington, Jr.
Andrew Johnson
Thurston Howell the 3rd
Woodrow Wilson
Dwight D. Eisenhower
Jimmy Carter



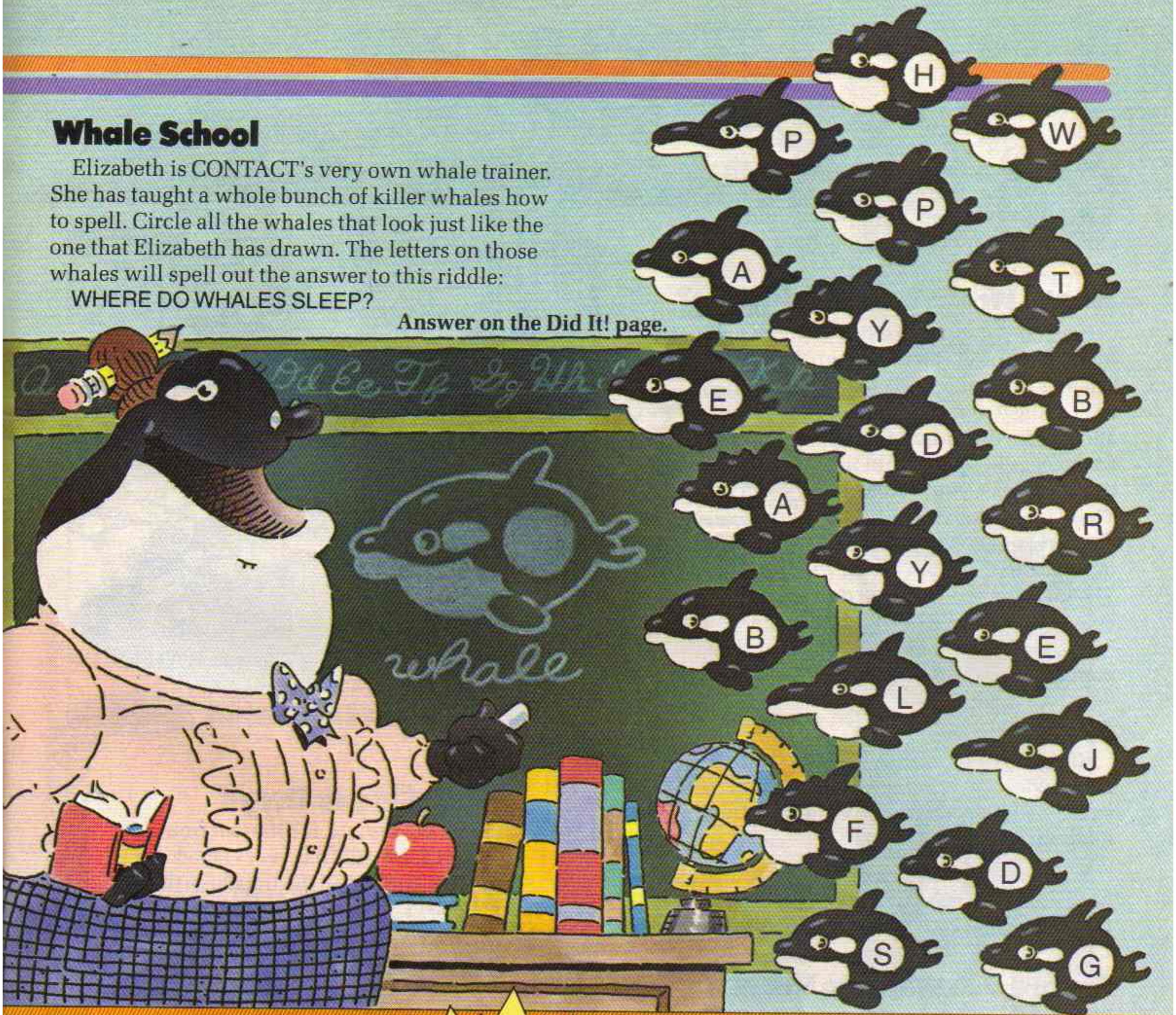
The answer to this puzzle isn't in the White House—it's on the **Did It! page.**

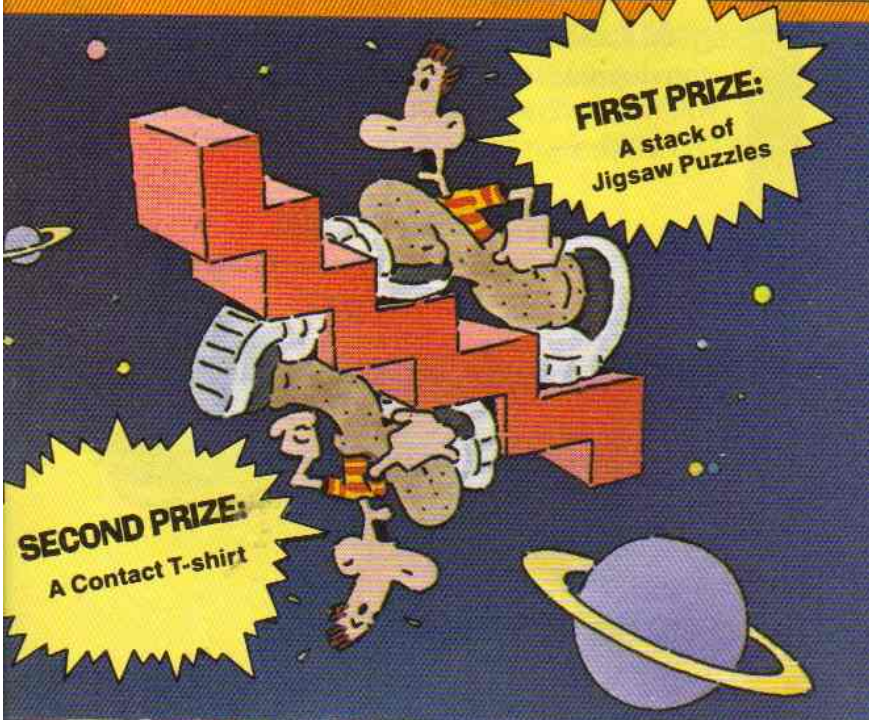
## Whale School

Elizabeth is CONTACT's very own whale trainer. She has taught a whole bunch of killer whales how to spell. Circle all the whales that look just like the one that Elizabeth has drawn. The letters on those whales will spell out the answer to this riddle:

WHERE DO WHALES SLEEP?

**Answer on the Did It! page.**




## An Extra! Contest

You've read about optical illusions. Now try inventing your own and entering them in our contest. You can use paper, pencils, crayons, photos, anything you like.

Our favorite entry will win the first prize–some eyeball-baffling jigsaw puzzles! Our five second place winners will get their very own 3-2-1 CONTACT T-shirts.

Please note: We can't return your artwork to you. Mail your entries to:

**Optical Illusions**
**3-2-1 Contact Magazine**
**P.O. Box 40**
**Vernon, NJ 07462**

# Did It!

## Cat Chat

8 hours were both partly sunny *and* partly cloudy. Bob counted the same hours twice!

## What's Wrong with this Picture?

Here are some of the many things that are incorrect: The ocean liner is upside down. There is no boat pulling the water skier. According to the sign, swimming is only allowed for one minute every day. There are Easter eggs in the coconut tree. If you buy three bananas, you'll have to pay extra money. There is an igloo on the beach. There's a mermaid on one of the beach blankets. The man in the tuxedo is fishing with a broom. The thermometer reads 20 degrees – that's below freezing. According to the sign, you can only swim when there's no lifeguard. The monkey in the tree has five hands!

## Family Sighs

Ripley U. Off charged $1.00 for the first hour, twice as much for the second hour, and so on. Bad deal. Here's how much the tent really cost:

1st hour: $1. 2nd hour: $2. 3rd hour: $4. 4th hour: $8. 5th hour: $16. 6th hour: $32. 7th hour: $64. 8th hour: $128. Total cost = $255.

## Square One Wants to Know

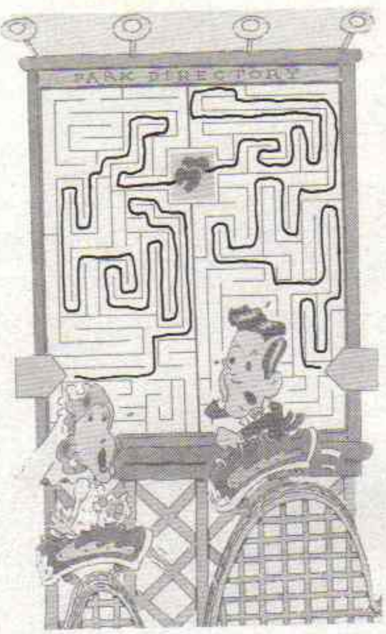
**1)** The bus was driving in reverse: facing west, going east. **2)** They are equal. They both weigh one pound. **3)** Amy is Eve's mother. Ruth is Amy's mother and Eve's grandmother. **4)** At 3¢ a glass, 50 glasses cost you $1.50. You sold them *all* for 10¢. You lose $1.40. **5)** All of them. **6)** $23 \times 0 = 51 \times 0$

## Extra!

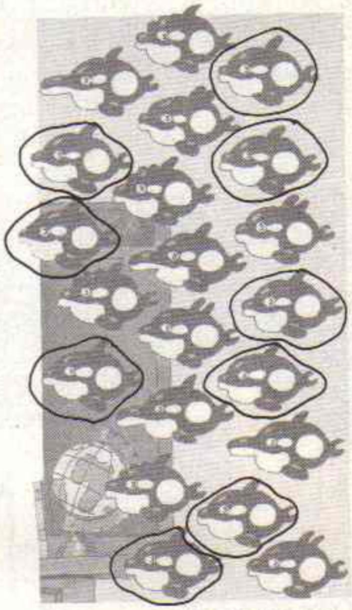
### Hail to the Chief?

Milton Bradley/Reggie Jackson/Mildred Pierce/Doodles P. Washington, Jr./Thurston Howell the 3rd

### Lost Lovers




### Whale School



Answer: WATERBEDS

## Next Month!

### Circus Days

A circus in Peru, IN, is different from any circus CONTACT has ever visited. It's staffed by kids–from the trapeze artists to the clowns!

### CONTACT Goes to the Movies

Get a behind-the-scenes look at how movie-makers create all the weird sounds you hear in the movies. And get a chance to make your own incredible sounds!

### Animal Tales

Dogs have learned to live with humans. Why haven't tigers?

### And much, much more!

# Put the right magazine in a child's hands...

## and watch the fun and learning begin!




**PRE SCHOOL**

**ages 2 through 6**

**SESAME STREET MAGAZINE**

From the TV show that revolutionized learning—Big Bird, Bert and Ernie, Grover and all the other "folks" keep your pre-schooler entertained for hours! Plus a Parent's Guide! Ten issues a year, just $13.97.

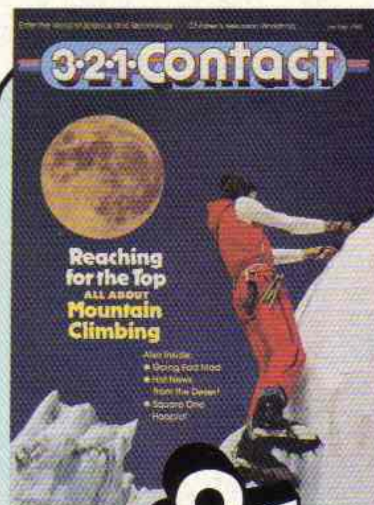



**ages 6 to 10**

**KID CITY MAGAZINE**

***(Formerly Electric Company)***

Makes reading, language skills and learning fun. Educates and entertains through stories, puzzles, word games, projects and features. Perfect for Sesame Street Graduates! Ten issues for just $13.97.

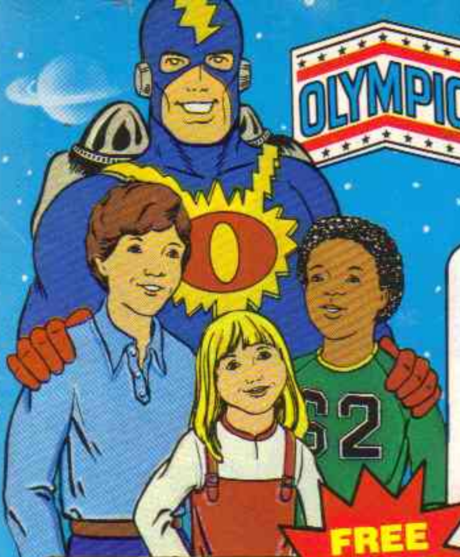



**ages 8 to 14**

**3-2-1 CONTACT MAGAZINE**

Award winning articles about Nature, Science and Technology. Each issue is packed with puzzles, projects, and challenging Square One TV math pages ...All designed to help your child learn while having fun. Ten issues for just $15.97.

**Your kid will love it!**
**Just return the order card of your choice...TODAY!**



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OLYMPIC

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## SELL CARDS & GIFTS FROM FREE SALES CATALOG!

**GO, GO, GO . . . WITH CAPTAIN "O"!** PICK YOUR PRIZE from Olympic's FREE full-color Prize Catalog! OR KEEP CASH — $1.00 for every item sold! It's easy to earn PRIZES or CASH by selling attractive Christmas Cards and Stationery, All-Occasion Cards and Gifts from Olympic's FREE 1989 Sales Catalog!

Show your Sales Catalog to friends, relatives, neighbors. *Anyone's* a prospect! With Olympic, you *pay nothing . . . owe nothing . . . return nothing!* You get full membership information and all sales material FREE!

SO DON'T WAIT! Call us TOLL FREE now, or mail us your name, address and zip code TODAY!

**OLYMPIC SALES CLUB, INC.**
Dept. 89CT7 Enfield, CT 06082
Call Free: 1-800-777-8907..........Ask for Val

FREE PRIZE CATALOG








# PHONE FREE

**ASK FOR VAL . . .**

She or another Captain "O" operator is waiting to rush your name, address and zip code to us.

★ PLEASE . . . our operators can take name and address only . . . CANNOT answer questions. *(Olympic's service is available in all 50 United States and Puerto Rico. Alaska and Hawaii included.)*

**CALL CAPTAIN "O" OPERATOR TOLL FREE**

# 1-800-777-8907*

**24 HOURS A DAY . . . 7 DAYS A WEEK, INCLUDING SUNDAY**

SQUARE ONE Television

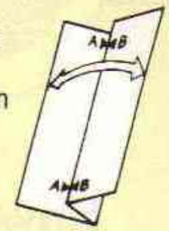
*Pack)ther...*

# SQUA)LD-IN

Eric and Ray are trying to get to the Campgrounds. But there's something w directions! By studying the directions, they'll end up? For the answer, fold



2) Grab the top left corner and fold back in half again so that "A" is next to "B" like this:



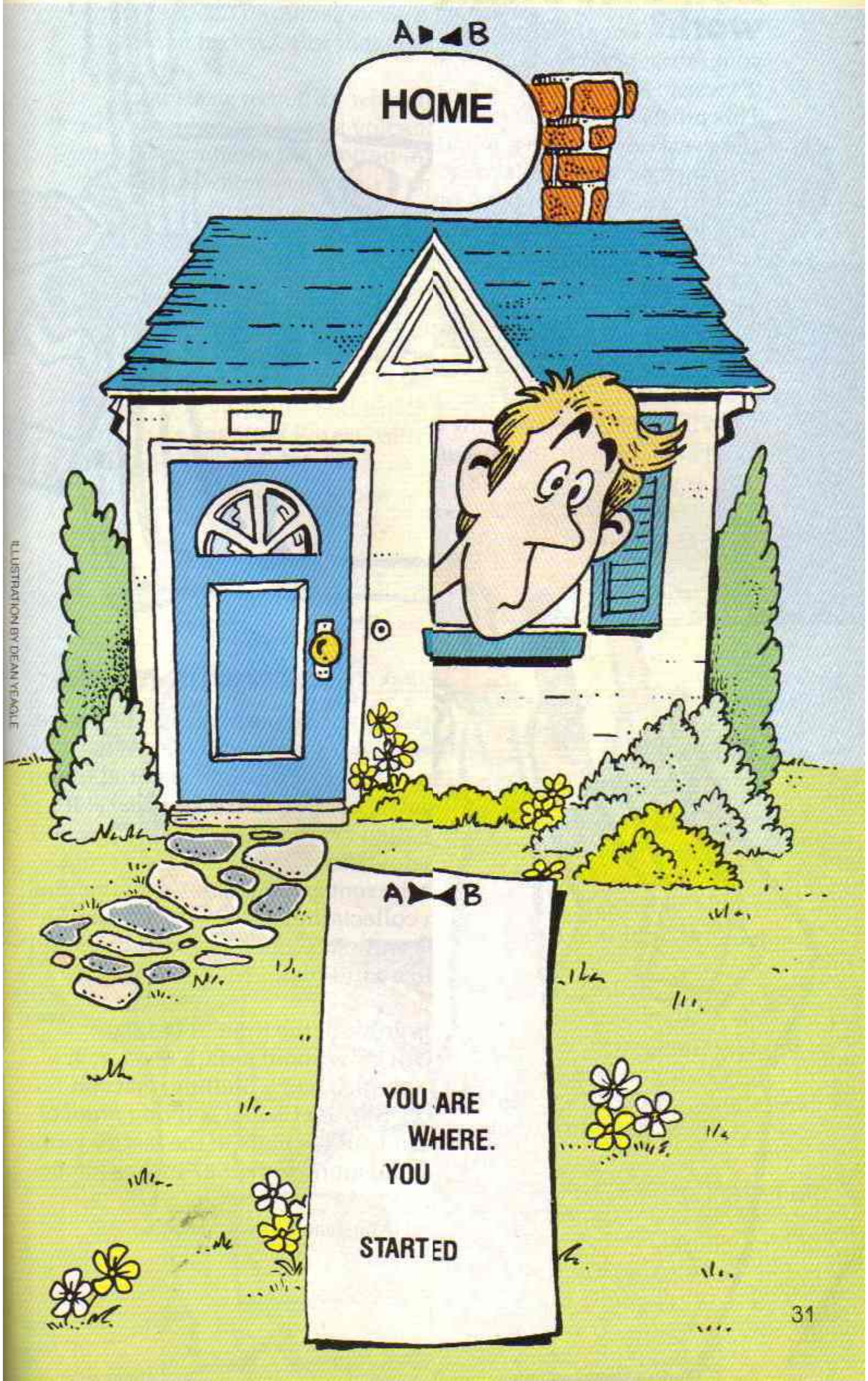




ILLUSTRATION BY DEAN YEAGLE